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MARCH, 1950

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Crops

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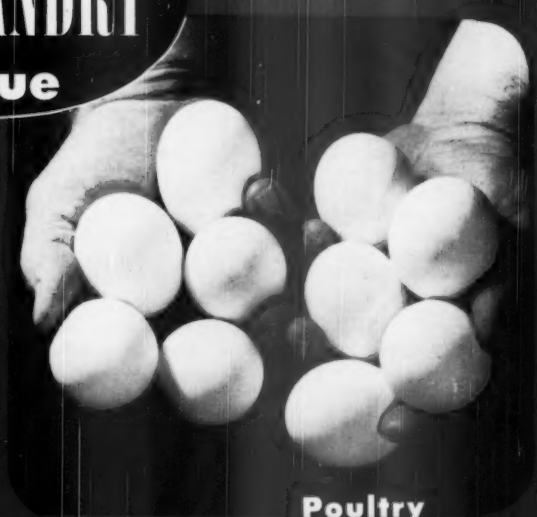
ANNUAL HUSBANDRY Issue

Livestock



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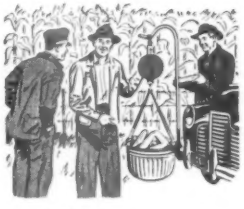

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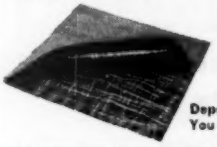

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WASHINGTON NEWS

By **FRED BAILEY** and **JAY RICHTER**

KEEP YOUR EYES ON PATTON—A man to watch in coming weeks is James George Patton, hard-hitting, left-of-center boss of the Farmers Union.

James Patton

The 47-year-old former insurance salesman, who is currently drumming for partition and local control of the giant insurance firms, is an argumentative and persuasive operator.

He is today, quite clearly, the only major farm organization leader with a clear channel into the White House. Master Albert Goss of the Grange hasn't had the Truman ear for a year or more. President Allan Kline of the Farm Bureau is publicly, almost monotonously, at bitter odds with the administration.

Patton has the reputation in Washington of being able to juggle more balls than a seal. He wants early and forced federal divorce of the Farm Bureau and Extension Service; a crack-down against the "fertilizer trust" and big business generally; TVA-type development of river basins; and full authority for REA to generate, as well as transmit, power.

Ringing endorsement of these goals by Farmers Union members are confidently expected when the farm group holds its convention in Denver early this month.

The Brannan Plan is to hold the center of the stage at Denver. A long-time friend of Brannan, whose farm program includes many of his favorite ideas, Patton has done as much as any man to sell the President on the Secretary's proposals.

Only Nebraska is expected to be against the Brannan Plan at the Denver meeting. Other states are practically dead-sure to back it, probably with a whing-ding demonstration.

Behind the fireworks there will be brewing some potent political medicine. The powerful vote potential of a united farmer-labor front is always on Patton's mind. It is no secret that Harry Truman sees the combination as the best bet for continued success at the polls.

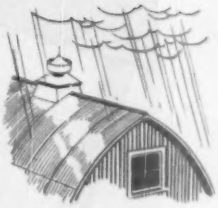
Likely result of the Denver planning is airtight cooperation between the Farmers Union and administration to win votes with the Brannan Plan in congressional elections next fall.

DEMOCRATS TO SELL BRANNAN PLAN—The Democratic party is to put on a multi-million dollar campaign to sell the Brannan Plan, with possible labor union contributions augmenting the war chest.

Strategy, at the same time, will be to discredit present farm legislation. That shouldn't be too hard.

It already has become clear that the farm law passed last year is an ineffectual patchwork of political compromises. It encourages crop production that is not needed, and does little to stimulate livestock production.

Keeping crop prices up is going to be tougher and tougher, and costlier and costlier for taxpayers. Brannan won't hesi- (*Continued on page* 32)



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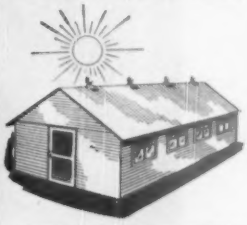

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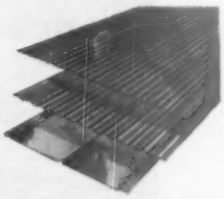

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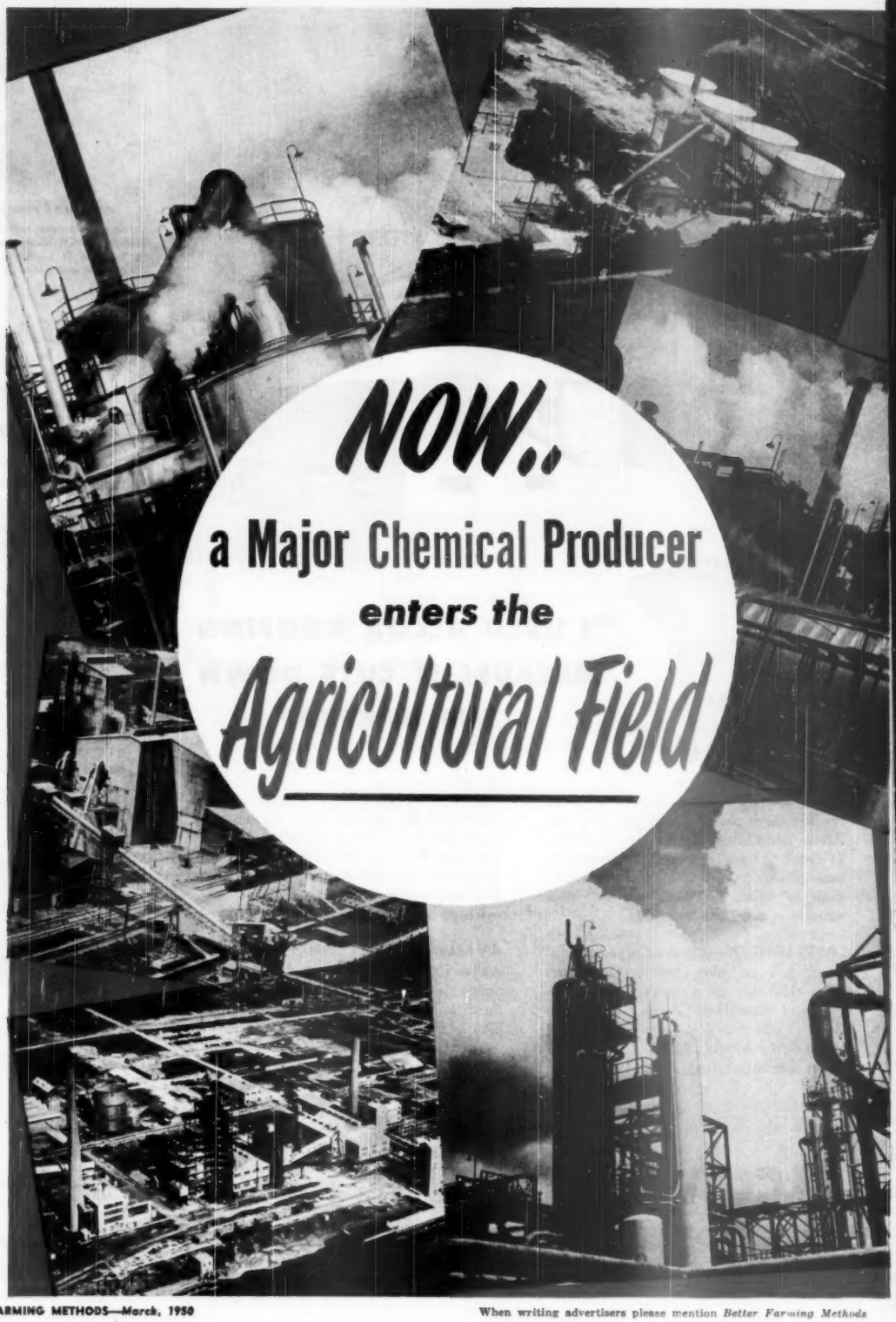

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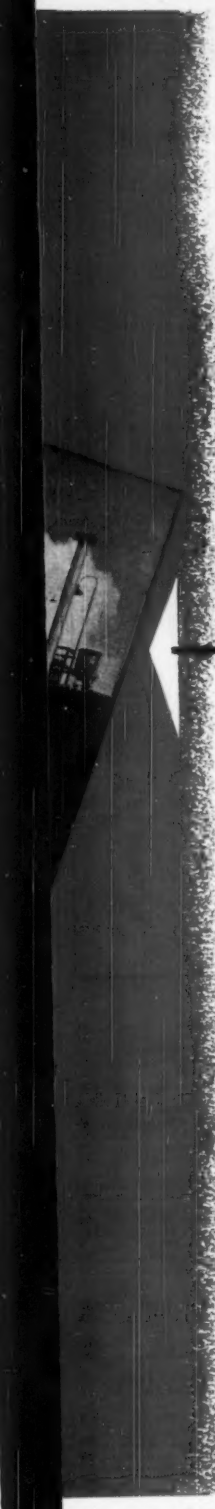

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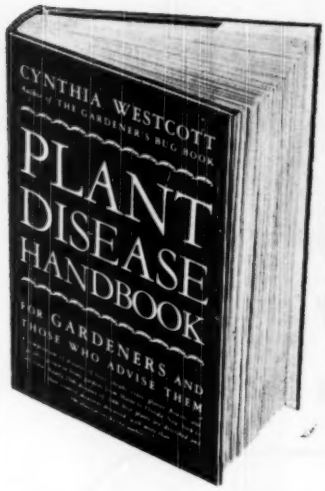

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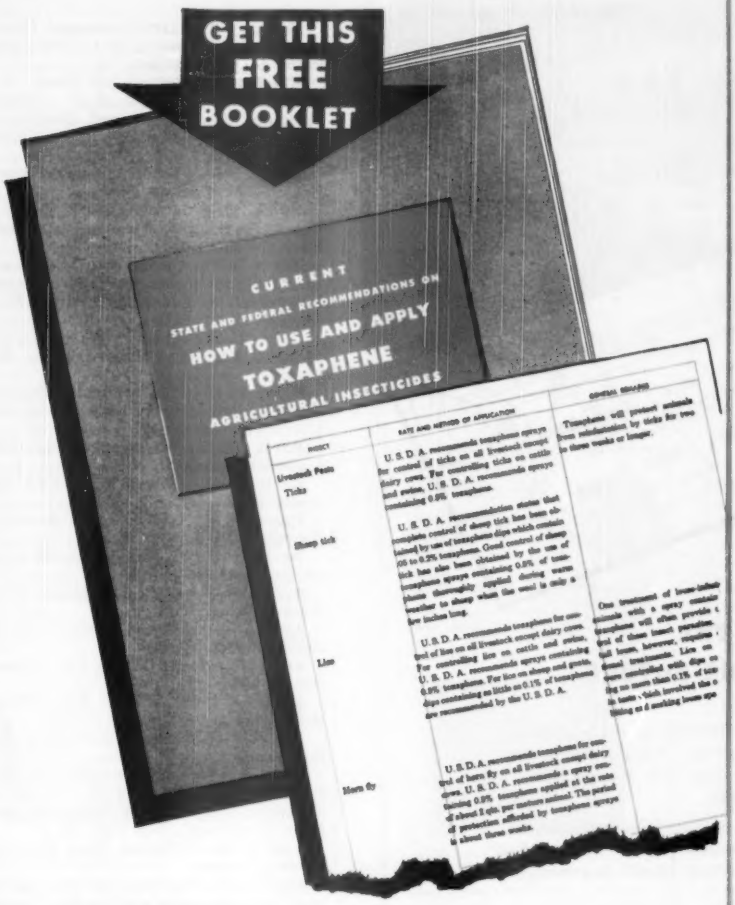

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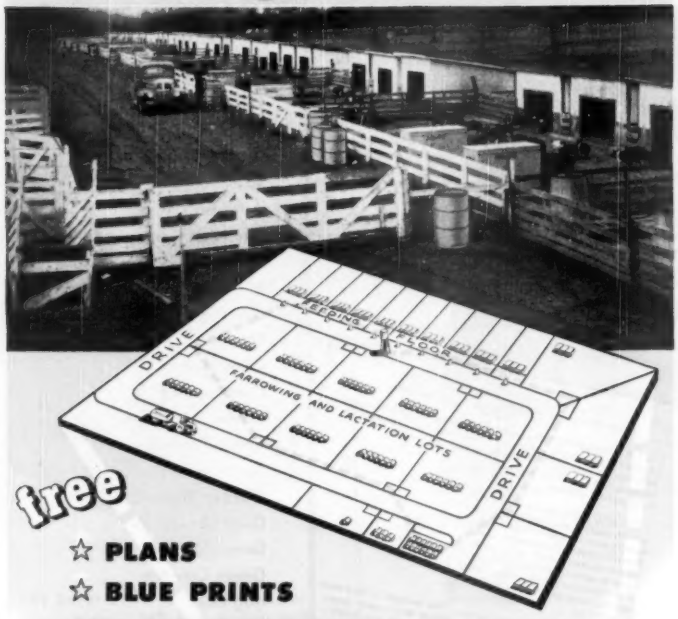

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March 7-8—Wyoming Ranch Farm & Home Week, Laramie, Wyo.

March 13—One week short course in Dairy Farm Management, Pennsylvania State College, State College.

March 14-17—Central Regional Conference for Supervisors & Teacher Trainers in Agricultrual Education, Sherman Hotel, Chicago, Ill.

March 21-22—Michigan State FFA Convention, Michigan State College, East Lansing.

March 21-23—Fifth Annual Midwestern Milk Marketing Conference, Ohio State University, Columbus.

March 22-25—Washington State FFA Convention, Pullman.

March 23-25—Oregon State FFA Convention, LaGrande.

March 30, 31, April 1—Idaho State FFA Convention, Boise.

March 31-April 1—Utah State FFA Convention, Salt Lake City.

April 3-7—Iowa Annual Extension Conference, Ames, Iowa.

April 5-7—Northwest Junior Livestock Show, Auburn, Wash.

April 5-7—Nevada State FFA Convention, Overton.

April 6-8—Indiana State FFA Convention, Lafayette.

April 7-8—Wyoming State FFA Convention, Casper.

April 11-14—North Atlantic Regional Conference for Supervisors & Teacher Trainers in Agricultural Education, Barbizon Plaza Hotel, New York, N. Y.

April 13-15—Nebraska State FFA Convention, Lincoln.

April 17-21—Southern Regional Conference for Supervisors and Teacher Trainers in Agricultural Education, Robert Richter Hotel, Miami Beach, Fla.

April 24-25—South Dakota State FFA Convention, Brookings.

April 29-May 6—National Home Demonstration Week.

May 1-3—Wisconsin State FFA Convention, Green Lake.

May 1-5—Pacific Regional Conference for Supervisors and Teacher Trainers in Agricultural Education, Shirley-Savoy Hotel, Denver, Colo.

May 7-9—Minnesota State FFA Convention, St. Paul.

May 14—National 4-H Club Sunday.

June 5-7—Colorado State FFA Convention, Estes Park.

June 7-9—Pennsylvania State FFA Convention, State College.

June 8-10—Alabama State FFA Convention, Auburn.

June 11-17—Texas Annual Extension Conference, College Station, Tex.

June 13-15—Illinois State FFA Convention, Urbana, Ill.

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July 19-21—Texas State FFA Convention, San Antonio.

July 21-25—West Virginia State FFA Convention, Jackson's Mill.

July 25-27—Maryland State FFA Convention, College Park.

August 16-18—Arizona State FFA Convention, Prescott.

August 23-25—Vermont State FFA Convention, Burlington.

September 30-October 7—National Dairy Cattle Congress, Waterloo, Ia.

October 3-5—National FFA Judging Contests in Dairy Cattle & Dairy Products, Waterloo, Ia.

October 9-12—National FFA Convention, Kansas City, Mo.

October 11-14—National FFA Judging Contests in Poultry, Livestock & Meats, Kansas City, Mo.

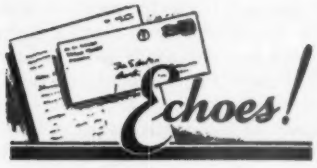
October 14-21—American Royal Livestock Show, Kansas City, Mo.

October 30-November 4—Annual California Extension Conference, Asilomar, Calif.

November 4-12—National 4-H Achievement Week.

November 26-30—National 4-H Club Congress, Chicago, Ill.

November 27-29—National County Agent Convention, Edgewater Beach Hotel, Chicago.



He Still Likes Us

I sincerely thank you for sending me Better Farming Methods during 1949. I look forward to receiving your fine magazine during 1950.—*Martin M. Hyzer, state dairy and food inspector, Andes, N. Y.*

★

Enormous Value . . .

Congratulations on your latest issue devoted to agricultural chemicals! This is the finest thing of the sort I have seen and should be of enormous value to anyone working in the field of agriculture.—*J. B. Adams, executive secretary, Illinois FFA Association.*

★

Likes "Ag Chem" Issue

The "Ag" Chemicals Directory in the January Issue will be of considerable value to many people. Congratulations to those responsible for its preparation and publication. —*C. C. Blickenstaff, zoology and entomology department, Iowa State College.*

"My Neighbors didn't have TITE-ONS"

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Tite-Ons interlock to form a "one-piece" roof, so firmly anchored that hurricanes haven't been able to tear them loose!

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Engineered to give real protection against storm and wind . . . with patented, *Ruberoid-originated* features that give the utmost in weather protection.

When a devastating storm swept down through Minnesota and Wisconsin last October 10th the newspapers reported property damage running to hundreds of thousands of dollars in the farm areas affected. During the following three days, Ruberoid conducted a survey involving scores of Tite-On Roofs in the wind-swept farm sections. Our findings: *Again* Tite-On roofs came through unscathed and unruffled.

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*Name and address on request.

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8-3

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Business Magazine for Leaders Who Train and Advise Farmers

As I See It

By MILTON R. DUNK, Editor

Hands for Husbandry

Remember the story of Albrecht (Albert) Durer, the artist, who painted *"Praying Hands"*? He was the son of a poor and humble Hungarian goldsmith. When he was a young boy, he had to work at his father's trade because of a large family and lack of money. He had always wanted to paint.

The time came, however, when he was allowed to leave home and study with a great artist. Since Durer was very poor it was hard for him to make a living and study at the same time.

During these trying days he found a man, older than himself, who also had the ambition to become an artist. The two of them decided to live together. When living conditions became difficult, Albert's friend offered a suggestion.

"This way of working and trying to study," he said, "is intolerable. We are neither making a living nor are we mastering an art. Let us try another way. One of us could make the living while the other continues to study. Then when the paintings begin to sell, the one who has worked may have his chance."

The older man had his way and worked in a restaurant, scrubbing floors and washing dishes. His hours were long and hard. He did his work cheerfully because he was helping his friend and looking forward to the time when he could paint again. In the meantime, Albert worked diligently to master his art.

The time finally came when Albert had earned enough from his work to take care of both of them.

His friend left his hard work and took up his brush. But something had happened while he was working so hard with his hands. The work had stiffened his muscles, twisted his fingers and enlarged his joints so that he could no longer hold the brush with skill.

When Durer learned what had happened, he was filled with grief. One day Albert returned unexpectedly to his room and heard the voice of his friend in prayer. Seeing the work-worn hands folded reverently, a great thought came to him.

"I can never give back the lost skill of those hands," he thought, "but I can show the world the feeling of love and gratitude which is in my heart for his noble deed.

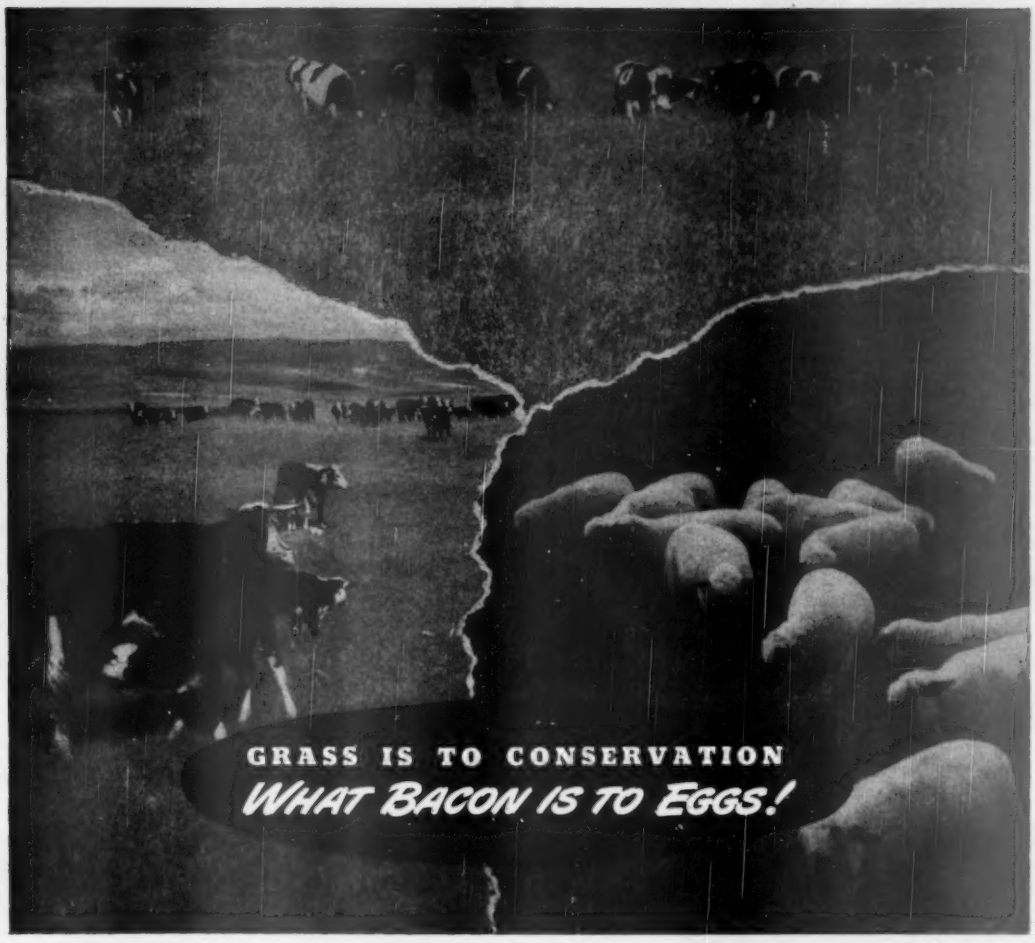
"I will paint his hands as they are *now*, folded in prayer, and the world shall know my appreciation for a noble, unselfish character. It may be that when people look at the picture they will remember with love and devotion all hands that toil for others and, like me, express in some beautiful way their appreciation for such beautiful service."

Hands for husbandry is the theme of the cover picture of this third annual husbandry issue. Hands for livestock—hands for poultry—hands for crops—hands for soils. An attempt has been made to bring to you the newer management practices in livestock, poultry, crops and soils. Many of the contributors to this issue are considered world authorities.

Hands for husbandry? Yes, we need better livestock, better poultry, better crops, and better soils. Farm people also need and want something more than just to do a better job of farming. There are other valves that make for the abundant life.

Henry Drummond expressed it so capably when he said, "Half the world is on the wrong scent in the pursuit of happiness. They think it consists in having and getting, and in being served by others. *It consists in giving and in serving others.*"

Through the years we have done a pretty good job of making two blades of grass grow where one grew before. We will continue to make improvements in all phases of agriculture. In doing so, let us not forget the larger service that is ours.



Find a farm planned for soil conservation, and you'll find grass—grasses and legumes that bind soil against erosion, and build it up to produce the cultivated crops.

Find grasses, and you'll find livestock.

Find livestock, and you'll find better farming.

Grasses make inexpensive feeds, inexpensive to grow, inexpensive to harvest. This is partly because grazing livestock helps with the harvest, but there's another reason. Modern farm equipment is built to harvest the forages inexpensively. The power mower, the automatic baler, the field forage harvester, and the loader—such equipment harvests roughages fast and easy, puts them in stack, barn, or silo with less expense.

For soil conservation, grasses, livestock, and power equipment make a great combination. You can help sell it.

John Deere

MOLINE · ILLINOIS

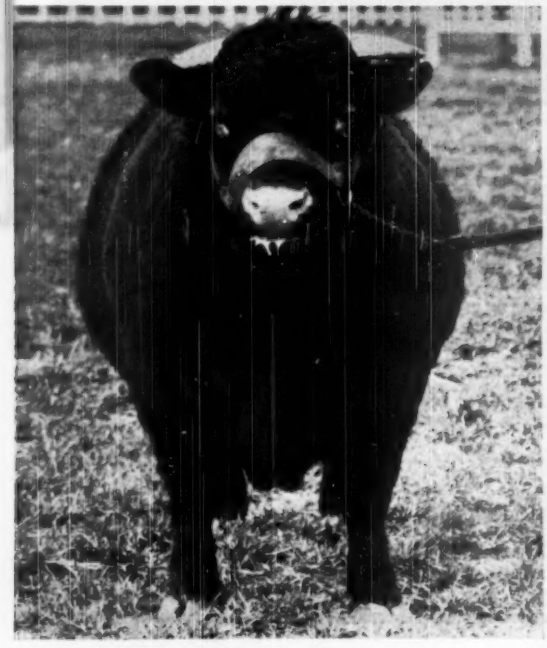
Practical Lesson in BEEF JUDGING

Photos Courtesy
The Shorthorn World

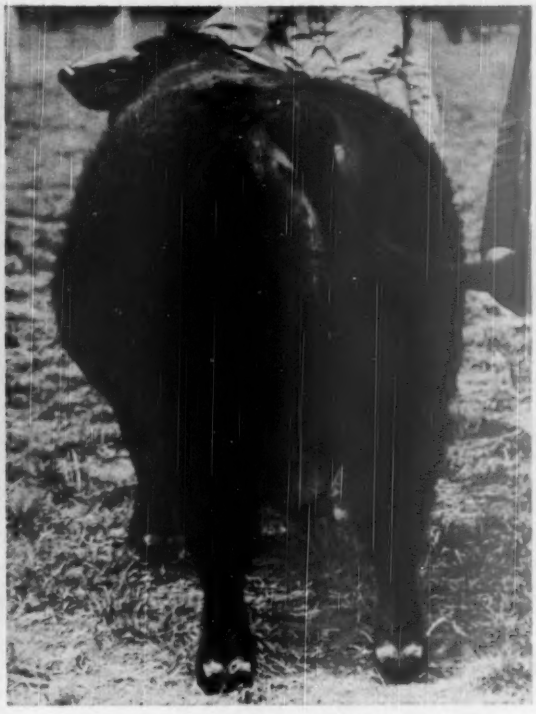
A good beef animal is rectangular in shape. Side view shows a straight back, smoothness, balance, deep flanks and high development of the most profitable parts of the carcass, with neatness of throat and brisket. The head is positive in masculinity, short, broad and flaring at the muzzle.

In front, a good beef animal presents a pleasing outlook, broad chest, wide, deep-ribbed, standing squarely on good legs.

The shoulders should carry an even covering of flesh and blend smoothly into a broad, deep body, with wide back and loin.



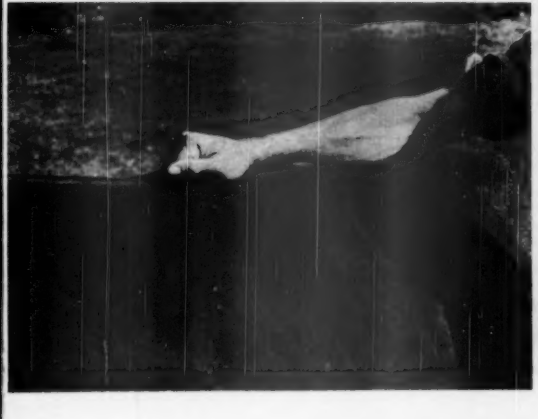
Long and level from smooth, deeply-covered hooks to tailhead, with rump beefed to the hocks and wide to stifle. Animal shows dominance in valuable carcass qualities.

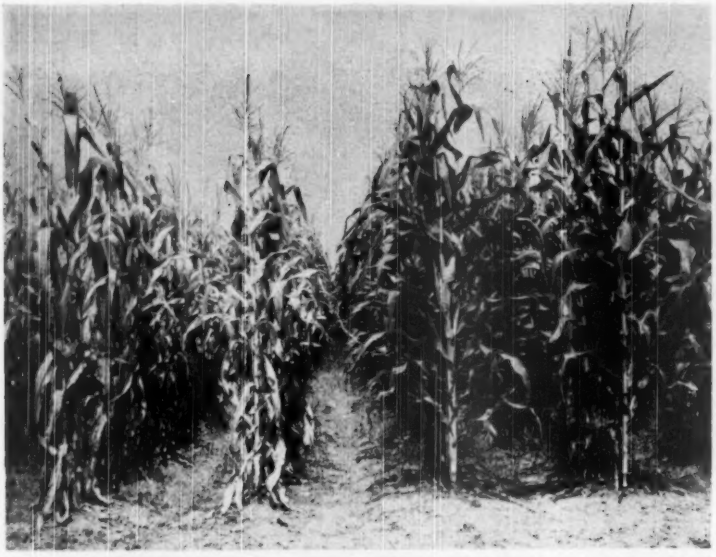


From rear is seen the wide arch and magnificent depth of ribs, smoothness of tail setting, deep twist, thickness and fleshing of hind quarters to hocks and legs.

This beef animal is close to the ground because of his tremendous depth of body. The fleshing of shoulder and forearm is indication of natural muscling.

"The skin should fit loosely like a comfortable overcoat," says a world-famous judge of cattle. Below is depicted the looseness of hide on the back.





Here signs of nitrogen hunger are easy to see. Corn on the left received no nitrogen and shows characteristic scorching; yield, 24.2 bushels per acre. Corn on the right received 180 pounds of nitrogen per acre. As a result, the yield was 110.3 bushels per acre.

Do You Know the . . .

HUNGER Signs in Crops?

By L. E. CHILDERS
USDA

● FARM CROPS, no less than farm animals, sometimes get hungry. Unlike a bunch of growing shoats that squeal and fight at the feed trough until grain or swill is provided, or cows that bawl at the barnyard gate for their regular allowance of hay or silage, plants in the fields don't make any noise about their hunger.

The signs of hunger in crops can be just as plain to an observing farmer, however, as the squealing of his pigs or the bawling of his cattle.

Livestock that never get enough to eat or lack some essential part of their diet, gain very slowly and become stunted. It is often observed that animals once stunted by lack of feed during early growth seldom win ribbons in the prize ring, and usually never quite measure up physically or in productive ability to their well-nourished brothers and sisters. Once a runt, always a runt—this is the rule, although as in all generalities, there are exceptions.

Plants that aren't well nourished also grow slowly and may become stunted. Slow growth is a common sign of plant hunger, although it may result from any disturbance in the plant-soil-water-light balance, such as drought. Slow growth also may be caused by disease or insect attacks.

It has been shown by research that where plants become stunted through improper nutrition or show other signs of soil deficiencies in minerals needed for normal growth, the chance for a big crop may already be lost even with other favorable conditions. Even if the needed nutritive element is supplied, where hunger signs are already present in the growing crop the deficiency cannot be completely remedied in time for a maximum yield, although the hunger signs may disappear and the crop may make a much larger yield than it would make if such steps were not taken.

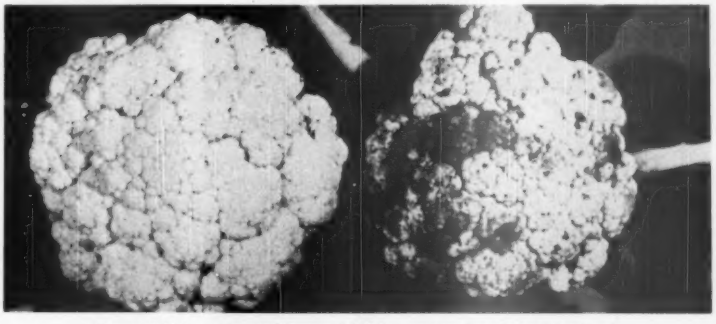
Hunger signs in animals and plants have not always been recognized as such, although the physical symptoms are sometimes very definite. It has been only in recent years, for example, that certain abnormal symptoms in cattle have been recognized as resulting from a lack of cobalt in the soil and in crops grown on these deficient soils. In crops, many of the hunger signs are even now not well defined, although some of them are becoming well known even to farmers. Intensive research is being done at many experiment stations to increase present knowledge.

Firing Result of Nitrogen Hunger

A few years ago the yellowing or firing of the leaves in a cornfield generally was accepted as caused by lack of moisture. Now farmers themselves know that this is often not the case. It may, in fact, be a sure sign of nitrogen hunger. It may occur even when there has been ample rainfall, although drought may intensify the symptoms. It appears in young corn in stunted and spindling plants, with leaves becoming greenish yellow to orange in color and tip ends gradually dying. In older fields, the symptoms may be similar, with older leaves at the bottom of the stalks first turning brown and with firing starting from the leaf tips and following down the center or midrib of the leaves.

Severe shortage of phosphorus causes corn to take on a characteristic purplish tint during early growth, which may follow through the entire life of the plant, even to the grain. A retarded growth rate and slow maturity also are major symptoms. Effects of this are noticeable later in irregular rows of kernels on the ears and other imperfections caused by poor pollination. Some symptoms common in

(*Continued on page 52*)



Boron deficiency in cauliflower (right), compared with healthy head.

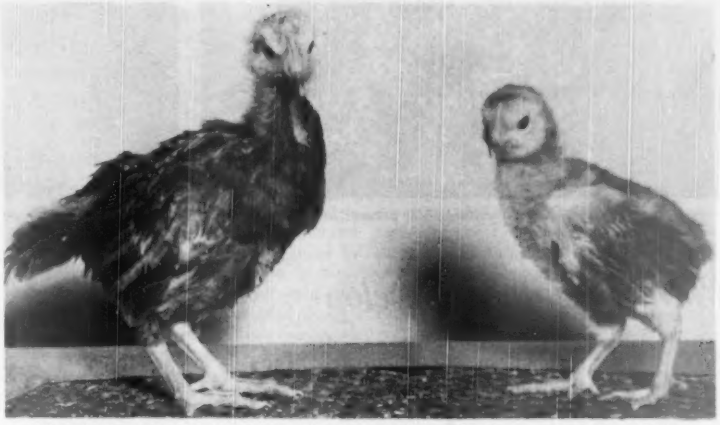
New Developments In . . .

Livestock and Poultry Feeds

By T. C. BYERLY
U. S. Department of Agriculture

● RAPID EXPANSION of soybean acreage during the war years made soybean meal our most abundant protein concentrate feedstuff for pigs and poultry.

Nutrition research showed that soybean meal must be heated mildly and supplemented with minerals for efficient utilization. It was also found that animal protein sources, especially fish and liver products or cow manure, were still necessary to obtain optimal growth rates, feed efficiencies and reproductive performances. In general, about one-fifth of the protein concentrate had to be from animal sources, while four-fifths might be from soybean meal.



Vitamin B_{12} made the difference! The diets of the mother hens and of these chicks were deficient in this vitamin, but the chick on the left was hatched from an egg into which was injected approximately one one-millionth of a gram of pure vitamin B_{12} on the tenth day of incubation. The chick on the right was hatched from an egg which did not receive the injection. The two chicks were five weeks of age when photographed and each one was average for its group. (Photo Courtesy USDA)

Young Animals Need APF

The factor in animal protein concentrates and cow manure necessary for efficient utilization of soybean protein was called the animal protein factor (APF). In its absence, young pigs, chicks and turkeys grow slowly and utilize their feed inefficiently. Hens deprived of the factor lay eggs which may fail to hatch or may hatch chicks incapable of living more than a week or so even with the best of feed and care.

From the practical feeding standpoint, a diet for young pigs and chickens and for breeding stock, should contain two or three percent of fish solubles or six percent of fish meal or ten percent of meat meal or sufficient APF concentrate to supply two parts of vitamin B_{12} per 100,000,000 parts of total diet. B_{12} concentrates are available from cultures of molds called Streptomyces used in the preparation of antibiotic drugs.

Farmers should understand that B_{12} and its associates in APF are only essential trace components of good feeds. Soybean meal adequately supplemented with APF will then be limited by its content of available methionine, an essential sulphur containing amino acid. Animal protein concentrates are our most practical sources of methionine.

Our knowledge of B_{12} and APF has enabled the informed feed manufacturers and farmers to use soybean meal as the major protein concentrate in their pig and poultry formulae with assurance. They cannot yet eliminate animal protein concentrates from diets for feeding swine and poultry nor for young stock.

Another major field of study which has resulted in facts of concern to producers of all classes of livestock is available energy in feeds. Interpretation of research in this field has been confounded by inter-relationship of energy values of feed and their crude fiber content and by the effects of specific substances in such commonly used high-fiber feeds as wheat by-products and alfalfa products.

During the past few years it has been demonstrated that replacement of wheat by-products by corn, reduction of alfalfa products to less than five percent and inclusion of high vitamin, high protein products including liver meal in broiler formulae results in improved growth rate and feed efficiency. These results have been variously attributed to increase in energy content per pound, reduction in fiber, increase in vitamins and increase in protein quality.

Limit Fiber in Energy Feeds

Some feel that "high efficiency," signifying important contributions from each of the factors listed, is a more descriptive term than "high energy." Recent work has demonstrated that two or three percent fiber from oats or cellulose added to these high efficiency feeds does not depress growth. The drop in efficiency on diets thus rendered more fibrous is less than that anticipated from the consequent decrease in available energy per pound. Other work has indicated that alfalfa products contain specific substances which retard growth of young chickens when such products comprise more than five percent of the diet.

The research on cow manure indicated that the APF could be formed by micro-organisms and this fact proved of first importance by the demonstration that chickens kept on deep, old litter grew and reproduced satisfactorily even when fed a diet very low in APF content.

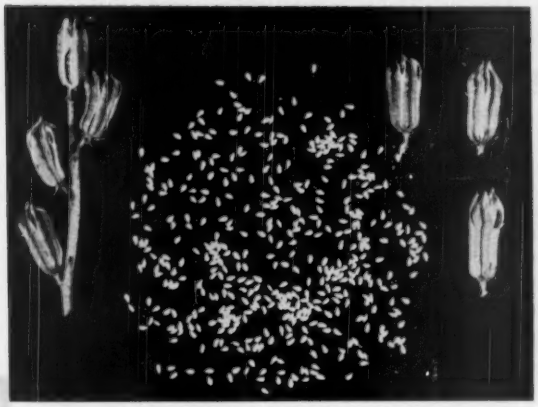
About two years ago, it was demonstrated that a new vitamin, B_{12}, essential for the growth of certain bacteria, was identical with the long-know antipernicious anemia factor derived from liver for use in human medicine. Subsequent tests showed that B_{12} is responsible for a major portion of the APF effects but not all of them.

Other Factors Required

Crude APF preparations stimulated growth of animals adequately supplied with B_{12}. It is certain that at least two more factors present in mold, bacteria and yeast residues, and in whey and other animal products, are needed for the full APF response.

Quantitative estimates of B_{12} potency of

(*Continued on page 59*)



Sesame seeds contain 50-55 percent oil.

Safflower growing in experimental plots.

Plant Scientists Develop . . .

New Crops for the Farm

By R. O. WEIBEL
University of Illinois

● WE ARE told that there are more than 300,000 known species of plants growing on the earth. Of this number, only a few hundred species are being cultivated by man today. Does this not excite one's curiosity to see what the possibilities might be for some of those hundreds of species untried as yet?

To help stimulate this interest to explore the potentialities, just stop and consider an example. Soybeans, now the second largest cash crop of the Corn Belt, was considered to have only a fair possibility for this area until about 1920. The United States now occupies first place in world production of soybean seed. Actually, the soybean was introduced a long time ago, but like many other introductions, did not receive much attention for many years.

Soybeans are on the records as early as 1896 at the Illinois Agricultural Experiment Station. It has taken time to develop acceptable varieties, to develop machines for handling the crop, such as the combine for harvesting, and equipment for processing, and to develop the hundreds of uses now being made of the oil and meal. However, with today's knowledge of plant genetics, organic chemistry and engineering, we are in a position to proceed much more rapidly.

There is also more emphasis being placed on "well-planned" plant explorations. It is hoped that plants can be found which will add disease resistance, insect tolerance and desirable agronomic characters to many of the species we now have, as well as to introduce new ones.

Safflower Grown in Southwest

In the meantime, there are some which are coming up through the process of development. Some of these are already on a commercial basis. One of these is safflower. Safflower, a short growing annual, is adapted to the western parts of the northern great plains. If fall planted, it is also adapted to parts of the southwestern United States, including California. Between 20,000 and 30,000 acres were grown in 1949, with most of this in western Nebraska and eastern Montana.

Markets for safflower seed have been established by Western Solvents, Inc., Longmont, Colo. and Chemical Crops, Inc., Scottsbluff, Neb. Safflower is grown mainly for the oil obtained from the seed. New varieties developed by plant breeders at the Nebraska Agricultural Experiment Station produce seed averaging 31 or more percent of oil as compared to 24 percent for those formerly grown.

Nebraska 852 is the best available variety. The oil being a rapid drying oil is used mainly by the paint industry but has many other possible uses. The meal makes a valuable livestock food and makes available to the area of production a locally grown supplement for feeder and range stock.

Safflower fits well into the rotation systems of the area being used in the same way as any other full-season, spring-planted crop. Production methods have offered no particular problems and no special equipment is needed. Where adapted the new varieties are returning about the same income per acre as wheat.

Castor Oil Has Many Uses

Castor seed production has again reached the commercial stage in the United States, after a lapse of nearly 30 years, due to a limited demand and low cost imported seed. During this period research and production has, for the most part, been spasmodic due to war emergencies. Now the chemists have found that castor oil is one of the most versatile vegetable oils known. It is being used mainly by the paint industry at present, but hundreds of uses have been developed and chemists report many more uses to be expanded when oil in sufficient amounts become available. This has created an interest in domestic production.

Commercial plantings have been sponsored by the Baker Castor Oil Company. This program was initiated in 1947 with about 100 acres planted in Illinois and scattered plantings from southern Illinois southwest to Texas and west to California. Interest increased rapidly in some areas and it is reported that 25,000 acres will be planted in 1950 with most of it in Oklahoma and Texas.

Present Varieties Restricted

Native to the tropics, the plant is a coarse perennial, but because it cannot stand freezing temperatures, is treated as an annual in temperate climates. It is adapted best to well-drained loam or sandy loam soils. Limited by disease in the coastal region, growing season (at least 160 to 180 days) and, unless irrigated, rainfall (15 to 20 inches), the present varieties are, for the most, restricted to areas in Oklahoma, Kansas, Missouri, Arkansas, and portions of the surrounding states. As yet only one variety, Conner, is important. Higher yielding and

better adapted varieties should be available soon. The seed is from 50 to 55 percent oil. Castor seed meal or pomace is toxic to livestock and is utilized mainly by the fertilizer industry.

Develop Harvesting Equipment

Production problems have not been serious, but harvesting up to the present has had to be done by hand. A special harvesting machine originating at Nebraska, and now being sponsored by the Baker Company, has been built by Belle City Manufacturing Company, Racine, Wisconsin. The 1949 model looks promising but there is no report as yet on cost of machine nor whether they will be available for the 1950 season.

Two types of hullers have been designed, one by the United States Department of Agriculture, and one by the Agricultural Engineering Department, University of Tennessee. The USDA machine is being built by Belle City Manufacturing Company and used by the Baker Company. Yields of hulled seed from commercial plantings have ranged from 500 to 1,500 pounds per acre in Illinois. The market as yet has been to the Baker Castor Oil Company who have contracted for the acreage grown.

Sunflower Meal Has High Feed Value

Sunflower seed production as an oil producing crop has gained commercial production proportions in certain areas of the United States and Canada. The development of short growing varieties that can be harvested by machines (modified combine) and producing seed with a high oil content have made it commercially feasible.

Sunflower seed oil is a very excellent edible oil. Sunflower seed meal is high in protein of high digestibility and nutritive value. It is high in calcium and exceptionally rich in the vitamin, thiamine, and niacin. Fiber-free meal or flour has possibilities as a supplement for bread and pastry flour correcting many of the nutrient deficiencies of this widely used food.

Sunflowers, native to North America, are adapted to a wide range of soil and climatic conditions. At present, the center of production is eastern North Dakota and western Minnesota with approximately 20,000 acres and southern Manitoba, Canada, with 28,000 acres grown in 1948.

Advance Outstanding Variety

There are few short-growing high oil varieties available and only one which has proved to be outstanding. This is the variety, Advance, a hybrid developed in Canada. Advance compares to a top-cross in corn and for maximum yield and uniformity, first generation seed should be planted each year. Other varieties from Canada are Sunrise and Mennonite. Canadian authorities recommend them in the following order: Advance, second generation Advance, Sunrise, and then Mennonite. With the present varieties, insects may be a limiting factor in the southern areas.

Sesame Seed Has High Oil Content

Sesame is receiving considerable attention as a possible oil crop, although, as yet, it has not been grown to any extent as a commercial crop in the United States. Sesame seed is from 50 to 55 percent oil. It is an excellent edible oil and the meal makes a high protein livestock food. Sesame is a warm weather crop. Seedlings do not compete well with weeds and even more serious is the fact that it shatters seed badly.

However, research workers in Texas and Nebraska have found the plant extremely drouth resistant and with the recent introduction of a nonshattering type, interest has increased and breeding programs speeded up. Yields of the present varieties under experimental conditions have indicated the plant has possibilities over a wide area of the southern, south-central, and southwestern states.

Okra Seed Source of Oil

Okra, normally thought of as only a vegetable crop, shows promise as a source of okra seed oil. Okra is a hardy annual plant adapted to the Cotton Belt. Experiments at the Louisiana Agricultural Experiment Station have shown that yields of 300 to 2,000 pounds of seed per acre (depending upon soil type and location) can be produced commercially. Breeding and selection for higher oil types are under way. Okra seed oil rates between cotton seed and peanut oil and can be used for any purpose for which cotton seed oil is now used.

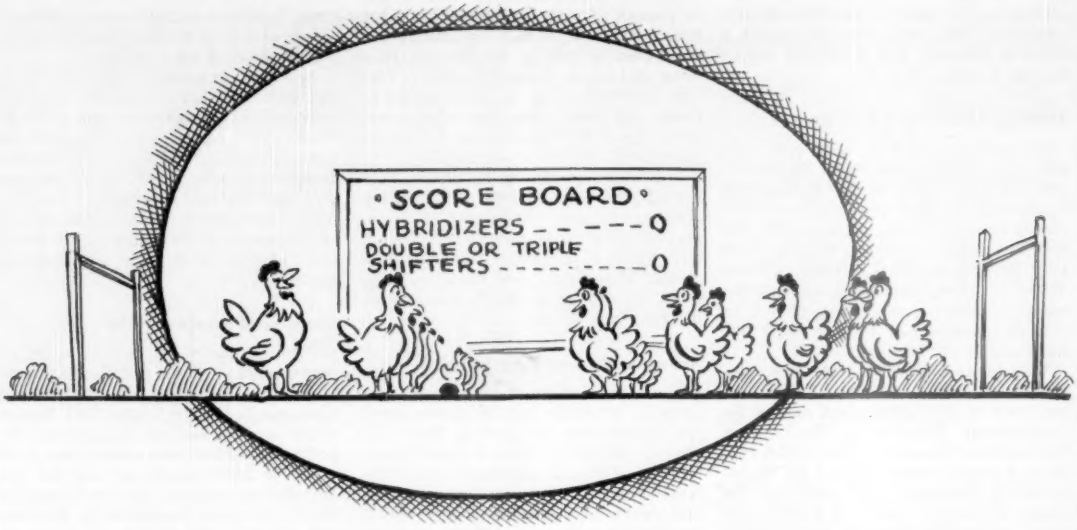
Conduct Research on Perilla

Perilla, a member of the mint family, has received some attention by research people but never grown commercially in the United States. Perilla seed is a source of a desirable rapid drying oil used by the paint industry. Like sesame, the seedlings do not compete well with weeds, and once mature shatters its seed very badly. Present varieties offer little chance for

(*Continued on page 81*)

Castor plant. Oil from castor beans is one of the most versatile vegetable oils known.

Sunflowers on experiment plots at Illinois Agricultural Experiment Station. In the foreground—Advance (dwarf type) sunflower. In the background is the Grey Stripe (tall type) sunflower. Note the difference in size, maturity and uniformity.



New Poultry Breeding Methods...

Hybridizers Vs. Double-Triple Shifters

By R. GEORGE JAAP
Ohio State University

It should be pointed out that this story was prepared at the time Ohio State University had Rose Bowl aspirations. This accounts for the football terminology used in the story.—Editor

● EACH SEASON a series of football games is played in the professional poultry breeding "studium." A part of the teams are using the highly publicized, often over-rated, 4-way hybrid formation. The other teams are using the one breed double or triple shift.

The writer has scouted a number of teams in this professional poultry breeding conference and, at the request of your editor, is now reporting on their tactics and formations. Both of these tactics are relatively new in professional poultry breeding and, as each season approaches, the poultry industry wonders which teams they should support.

A more technical name for this type of breeding tactics is "Diallel Crossing." In the obsolete single shift breeding method, each team of males was left in their respective positions in the pedigree breeding pens for the entire season. The double and triple shift makes use of a second or third team of new males which are shifted at the same time into their respective positions in each pedigree pen.

By this new method, two to three times as many males are given a chance to prove themselves. Conversely, the chances for identifying superior proven males is two to three times as great, depending upon whether the double or the triple shift is used.

Another new tactical method is used to prevent being penalized for too much time out. In professional poultry breeding it is known as artificial insemination. Through use of the artificial insemination tactic no valuable hatching eggs need be lost and the breeding season is shortened. Probably the simplest means for visualizing the way these shifts are made would be to diagram a more or less typical season. The length of time between shifts will vary. In the following example, the shifts of males are made every three weeks. This might be shortened or increased depending on the rate of chick production and frequency of setting the eggs.

Shift of males used	*Date males placed in pens*	*Date males are removed*	*Date of insemination for next shift*	*Period of hatched eggs from each shift*
1	Jan. 15	Feb. 16	Feb. 21	Feb 1-22
2	Feb. 21	Mar. 9	Mar. 14	Feb. 23-Mar. 15
3	Mar. 14			Mar. 16-Apr. 4

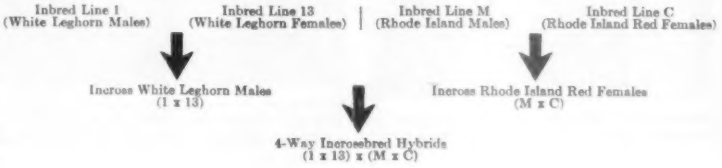
The semen used for the February 21 insemination is from shift 2 males and that for March 14 is from shift 3 males. In each case, all females are inseminated just before the new males are placed in the pedigree breeding pens. If artificial insemination is not used, five to seven days' eggs are lost between shifts.

This double or triple shift method of breeding has been demonstrated to speed up the improvement in professional poultry breeders stock when egg production is of major consideration. It should be equally useful for the professional breeder of broiler (meat) chickens.

Four-Way Hybrid Tactics

The 4-way hybrid formation would be analagous to a very prolonged training period in professional football. Each par-

(*Continued on page* 59)



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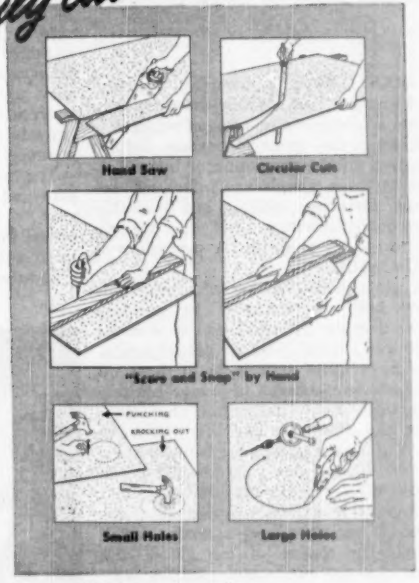

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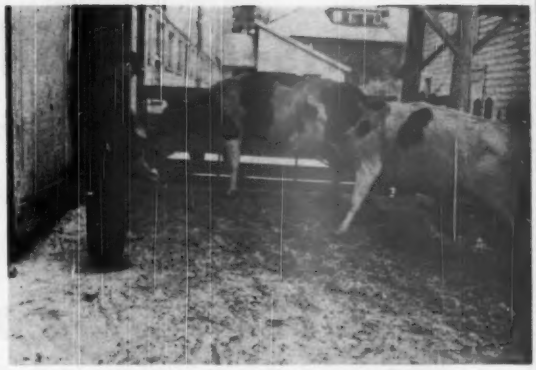
*Reg. U. S. Pat. Off.

A healed teat injury, but mastitis ruined the quarter.



A little sand prevents a slip and possible udder injury.

"Ag" Leaders Need to Take...

Another Look at Mastitis

By W. D. POUNDEN
Ohio State Experiment Station

● MASTITIS is a complex problem, being not just a single disease, but a group of disease conditions of udders.

Among the more important factors involved in the promotion of inflammation in these glands are infections, injuries, improper milking and probably inadequate nutrition. All must receive attention in a program for protection of udder health.

A great variety of bacterial infections have been incriminated in mastitis. When they are extensively present in the udders of a herd, even the best of herdsmen have quite a problem to maintain satisfactory standards of udder health.

Bacteria have individual characteristics like other forms of life, and make use of different means for attacking the cow and the mammary glands. The cells of the udder tissue may be destroyed through what amounts to digestion; the bacteria may produce a toxin which poisons the tissues of the gland, and sometimes the entire body; or the bacteria may grow in the milk within the udder, which results in the forming of irritating substances. These substances destroy the milk-secreting tissue and cause hard, fibrous tissue to form in place of it.

Several infections use combinations of these methods to attack a gland. Special means to prevent or offset the attack must be used by the cow, the veterinarian and the herdsman, depending on the method or methods of attack of the organisms.

Most of the easily-spread, common varieties of mastitic infections originate from cows' udders. Individual cows may pick up various infections from other sources. Purchases of infected stock provide the usual means of bringing common udder infections into herds.

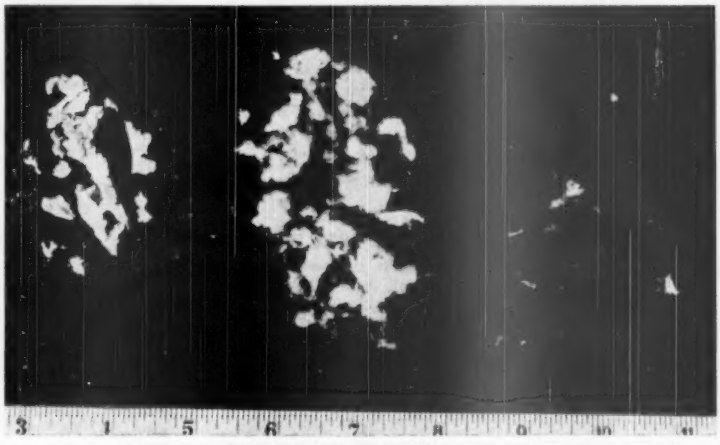
The milking operation provides the principal opportunity for spread from cow to cow. The bacteria hitch-hike across on hands, milking machines and other equipment.

Injuries to the end of the teat damage the tissues and ruin the efficiency of the closing mechanism of the teat. Injuries to the glandular part, such as bruises and chilling, apparently provide suitable conditions in the tissues for damaging activity by organisms that have previously managed to gain entrance.

Improper Milking Causes Trouble

Milk which is permitted to remain excessively long in an infected gland may stimulate an attack of mastitis. This may occur when a cow fails to force down her milk or is not completely

(*Continued on page* 41)



Abnormal sediment and clots from milk of three mastitis cases.

New Fruit Varieties

By CLARON O. HESSE
University of California

● BROOKS AND OLMO list some 747 fruit varieties belonging to 48 species in the first four annual lists of their "Register of New Fruit and Nut Varieties."

All of these have been introduced since 1920. Because of their age or economic importance many of them are now considered established commercial varieties and need not be mentioned here. Any complete list, over no matter how few years, is still a formidable one.

Give New Fruits Rigid Tests

A fruit intended for commercial production has to survive a critical test—commercial culture in all its phases, including marketing and processing. For this reason, many promising varieties fall by the wayside; new varieties are severely culled by the test of time.

In the accompanying table, approximately 100 varieties are listed. As will be noted, the date of commercial introduction is usually within the past 15 years. From a horticultural point of view, therefore, most of them are new. In time, many will disappear from our fruit lists, but who present can tell which will survive to become the McIntosh apple, the Elberta peach, the Bartlett pear or the 1000-year-old Thompson Seedless grape of the future?

Varieties Show Area Adaptations

Since practically all fruit varieties show marked regional adaptation, recommended lists differ from one region to another. The one appended here is of particular interest to California growers. It merely serves as an example that could be replicated many times in many regions, often with considerable change in emphasis on the various species. For example, even for this western area, all sub-tropical fruits have been omitted, although the interest in new varieties in this field is certainly no less than in the temperate zone fruits.

APPLES: Possibly the greatest interest in new apple varieties during the past 20 years has centered in the so-called red-bud sports of our better standard varieties. These are too numerous to

(*Continued on page 50*)

New Fruit Varieties of Interest to West Coast Growers

Fruit	*Variety*	*Introduced By*	*Date*	**Method of Development*
ALMONDS	Harparell	USDA: California AES	1938	1
	Jordanola	USDA: California AES	1938	1
APRICOTS	Bowers	W. I. Bowers, Wash.	1943	3
	Earle Orange	W. L. Roberts, Wash; Stark Bros. Nurs., Mo.	1945	3
	Earligold	W. H. Kemple, Calif.	1938	3
	Perfection	J. and Bertha Goldbeck, Wash.	1937	3
	Reeves	W. H. Reeves, Armstrong Nurs., Calif.	1947	3
	Riland	H. Yount, Wash.	1937	3
	Sun Glo	O. H. Hasler: Columbia & Okanogan Nurs., Wash.	1946	3
APPLES	Beverly Hills	California AES	1945	1
	Lodi	New York AES	1924	1
	Melba	New York AES	1936	1
	Valmore	V. Moore, Calif.	1934	3
PEACHES	Alamar	A. Martin, Calif.	1948	3
Freestones:	Amador	USDA, California	1943	1
	Fisher	C. H. Fisher, Ontario, Canada	1936	4
	Golden Jubilee	New Jersey AES	1926	1
	Halehaven	Michigan AES	1933	1
	July Elberta	L. Burbank, Calif.; Stark Bros. Nurs., Mo.	1930	2
	Kirkman Gem	W. Kirkman, Calif.	1946	4
	Leston	USDA, Calif.	1935	1
	Merrill Beauty	G. Merrill, Calif.	1947	2
	Merrill Gem	G. Merrill, Calif.	1947	2
	Newday	New Jersey AES	1938	1
	Raritan Rose	New Jersey AES	1936	1
	Red Haven	Michigan AES	1940	1
	Rio Oso Gem	W. P. Yerkes, Calif.	1933	3
	Royal Fay	F. Williams, Calif.	1945	4
	Sunhigh	New Jersey AES	1938	1
	Summercrest	New Jersey AES	1938	1
Canning Clingstones:				
	Andora	USDA, California	1941	1
	Carolyn	USDA, California	1944	1
	Corona	USDA, California	1943	1
	Cortez	USDA, California	1944	1
	Fortuna	USDA, California	1941	1
	Gomes	F. Gomes, California	1936	3
	Shasta	USDA, California	1941	1
	Stanford	USDA, California	1935	1
	Stuart	J. F. Stuart, California	1927	3
	Sullivan No. 4	C. E. Sullivan, California	1936	3
	Tudor	USDA, California	1941	1
	Williams	Calif. Pack. Corp., Calif.	1936	3
	Wiser	R. B. Wiser, California	1927	3
Low Chilling Requirement (f = dessert and freestone; c = canning clingstone)				
	Bonita (f)	California AES	1943	1
	Chaffey (f)	G. P. Weldon, California	1939	1
	Flamingo (f)	Armstrong Nurs., California	1948	1
	Fontana (c)	G. P. Weldon, California	1939	1
	Golden Blush (f)	B. H. Haley, California	1938	3
	Golden State (f)	California AES	1943	1
	Hermosa (f)	California AES	1943	1
	Meadow Lark (f)	Armstrong Nurs., California	1947	1
	Ramona (c)	California AES	1943	1
	Redwing (f)	Armstrong Nurs., California	1944	1
	Rosy (f)	California AES	1942	1
	Socala (f)	Mrs. C. Barnes, California	1943	4
	Sunglow (f)	California AES	1943	1
	Weldon (f)	G. P. Weldon, California	1939	1
NECTARINES	Bim	F. Anderson, California	1944	2
	Early Flame	Stark Bros. Nurs., Mo.	1946	2
	Early Le Grand	F. Anderson, California	1940	2
	Flaming Gold	L. Burbank, Calif.; Stark Bros. Nurs., Mo.	1928	2
	Fuzzless Berta	F. W. Hofmann, Virginia	1942	3
	Garden State	New Jersey AES	1934	1
	Kim	F. Anderson, California	1938	2
	LeGrand	F. Anderson, California		2
	Mabel	California AES	1940	1
	Philip	California AES	1940	1
	Pioneer	Armstrong Nurs., California	1949	1
	Sequoia	F. Williams, California	1943	4
	Starbright	F. Anderson, California	1940	2
	Tioga	USDA, California	1941	1
PEAR	Max Red Bartlett	A. D. McKelvie, Washington	1945	4
PLUMS	Albion	New York AES	1933	1
	Elephant Heart	L. Burbank, Calif.; Stark Bros. Nurs., Mo.	1929	2
	Flaming Delicious	L. Burbank, Calif.; Stark Bros. Nurs., Mo.	1934	2
	Gardner	Oregon AES	1939	1
	Golden Betsey	Williams, California		3
	Hall	New York AES	1923	1
	Hollywood	L. L. Brooks, California	1936	3
	Howard Miracle	Howard & Smith Nurs., California	1947	3
	Late Duarte	Placer Co., California		4
	Mammoth Cardinal	L. Burbank, Calif.; Stark Bros. Nurs., Mo.	1934	2
	Mariposa	Mrs. J. B. Thompson, Calif.	1935	3
	Padre	USDA, California	1938	1
	Stanley	New York AES	1924	1
GRAPES	Cardinal	USDA, California	1946	1
	Delight	California AES	1947	1
	Emerald Riesling	California AES	1949	1
	Perlette	California AES	1946	1
	Ruby Cabernet	California AES	1949	1
	Scarlet	California AES	1946	1
SMALL FRUITS	Campbell strawberry	California AES	1949	1
	Cupertino strawberry	California AES	1949	1
	Donner strawberry	California AES	1945	1
	Lassen strawberry	California AES	1945	1
	Shasta strawberry	California AES	1945	1
	Sierra strawberry	California AES	1945	1
	Tahoe strawberry	California AES	1945	1
	Washington red raspberry	Washington AES	1938	1
	Willamette red raspberry	USDA, Oregon	1943	1

**1. Scientifically organized fruit breeding programs. 2. Well organized breeding programs based on more or less controlled hybridization, but without records. 3. Chance seedlings. 4. Mutations (bud-sports).*

Soil and Water . . .

Conservation Plan for Every Farm

By T. J. LONGWELL
Soil Conservation Service
Jackson, Tennessee

● A TENNESSEE vo-ag teacher had a dream, and he's making that dream come true with the help of Soil Conservation Service technicians, veterans' instructors and students.

The teacher, Charlie Ogles of Gordonsville, in lower Smith county. The dream, a complete-farm soil and water conservation plan on each farm where high school or veteran students live.

Ogles wanted students to have a well-rounded course in vocational agriculture. And he knew that they could learn soil and water conservation best by helping make and apply a complete-farm soil and water conservation plan at home.

He told his dream to SCS Technician Bob Dudney, who is assigned to the Smith County Soil Conservation District. Dudney had some ideas too. He saw in this an opportunity to get a lot of conservation work concentrated in one community with almost all of the people directly involved.

Smith county district supervisors thought it would be a splendid goal, and asked the Soil Conservation Service to try to provide enough help in the Gordonsville community to make it possible for each farm represented in the vo-ag classes to have a conservation plan.

Dudney and Ogles checked to see how many farms would be involved among the 75 high school students and the 140 veteran students. After accounting for short-term tenants, duplications, etc., they listed 104 farms.

As in all other plans, they encountered difficulty. The SCS soil scientists had made soil conservation survey maps on only about half of these farms. And these soils maps were necessary before farm conservation plans could be made, inasmuch as they provide information about the land which is used to determine land capability and needs.

After calling on Nathan Brown, SCS state soil scientist, for extra help, Dudney learned that Brown was looking for such a place where he could hold an annual "working meeting" for the eight soil scientists of the SCS located in Tennessee. With State Conservationist W. M. Hardy's approval, Brown and the other soils men prepared to spend a whole week in Gordonsville, mapping the farms, comparing techniques and discussing their problems and methods together.

But Ogles and Dudney prevailed upon them to meet with the 75 high school FFA boys, the 140 veteran students, seven veterans' instructors and interested farmers, to explain the fundamentals of land capability classification. The Smith county workers knew that with this understanding, students and their fathers could do much of their farm planning by themselves and with a minimum of time and help from Dudney and the vo-ag teachers.

So, during the first week of last November, Gordonsville was a mighty busy place. Monday afternoon, SCS technicians, vo-ag and veteran instructors got together to talk things over—sort of orient themselves for the week's activities. They brushed up on the concept of classification, use and treatment of land according to its capability; on local problems of mapping, and the soils, geology and topography of the area.

While conservation survey maps were being made on each farm, the SCS man was accompanied by a veterans' instructor, and wherever possible, by the farm owner and vo-ag student or veteran farmer.

Two afternoons were spent in conducting seven field meetings on as many farms with the 140 veterans, the 75 FFA boys, their instructors and interested farmers. In each meeting, as they walked

(Continued on page 36)

Charles Ogles (left center), vo-ag instructor, Gordonsville, Tenn., and N. I. Brown (right center), SCS state soil scientist, explain the use of the soil auger in checking types of soil.

Making Rain Stay Home!

With Home-Built Water-Spreading Systems

● Here is the latest J. I. Case Co. contribution toward better handling of run-off water. This new 10-minute film and a take-home booklet now released describe and picture the construction and operation of an actual water-spreading system in use on a farm in the Great Plains.

Such a system provides a double answer to water control problems: first, it spreads and slows run-off to prevent erosion; second, and equally important, it transforms the would-be flood into natural irrigation, spreading it thinly over the field and allowing time for necessary seepage into the thirsty subsoil.

Construction and maintenance of the system is carried out with farmer-owned and operated tractors and regular farm implements, such as moldboard and one-way disk plows.

Wherever you live, there are Case visual materials to help promote the best of advanced farm practices. Issued annually is this complete listing of films, booklets, charts. Write for your copy to nearest Case branch house, or Educational Division, J. I. Case Co., Racine, Wis.

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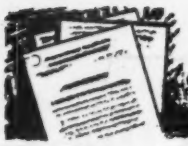

From the Colleges and Experiment Stations

Crossbreds Excel in Wool

At USDA Agricultural Research Center, crossbreds of Hampshires, Southdowns and Shropshires increased wool production over the parent breeds involved. Southdown purebreds produced 2.33 pounds of clean wool per fleece; Shropshires, 3.6 pounds; and Hampshires, 3.1 pounds.

By contrast, Hampshire X Shropshires made 4.55 pounds of clean dry wool; Shropshire X Hampshires, 3.98 pounds; and the Hampshire X Southdown cross yielded 3.8 pounds per fleece per year.

★

Report New Oat Disease

Probably a new disease, as yet unidentified, accounted for at least a part of the reduction that occurred in 1949 oat yields.

"The average per acre yield of oats on farms was 12 percent smaller in 1949 than in 1948," states Robert M. Salter, chief, Bureau of Plant Industry, Soils and Agricultural Engineering. "Our evidence points to a new and serious oat disease, not yet fully identified, as one source of this decline in yield."

Premature ripening characterizes the new oat disorder. The first symptom is a reddening of the leaves. Later the leaves die and become covered with a growth of fungi or molds. Circular areas with an ashy appearance are found in fields of infected plants. Grain produced from such areas is light and chaffy.

★

Announce New Soybean

Adams, a brand new variety of soybean, will be grown on Illinois farms in 1950 for the first time. Two other new varieties, introduced in 1948 and 1949, are becoming more popular.

This announcement was made recently by J. C. Hackleman, crops specialist, Illinois College of Agriculture. Only a couple of thousand bushels of Adams are available and they will be used to increase seed supplies. The two other varieties are Hawkeye, introduced in 1948, and Wabash, first grown generally in 1949. Supplies of both are fairly large, with a good demand in and out of the state for Wabash.

★

Glass Insulates Buildings

Recognizing the value of insulation in farm buildings in which livestock is kept, many farmers are interested in the use of double-sheet sealed glass window panes and glass block construction.

Comparison tests of these materials are underway at leading colleges and experiment stations. In New Jersey, reports W. C. Krueger, extension farm engineer, Rutgers University, a number of dairy barns and calf and maternity barns have been built, using glass blocks instead of ordinary windows. At least one poultry farmer is making plans to glaze his laying house with the insulating type of window panes.

Such control of heat losses permits more effective ventilation, points out the engineer, and makes possible a closer approach to best possible temperature and humidity conditions.

★

Nature Tough on Bull Calf

Although about 51 percent of all calves are bulls, about three or four percent of them are born dead or die the first day after birth, snys L. O. Gilmore, department of dairy husbandry, Ohio State University.

Recorded evidence also indicates that more bulls are aborted than heifers, explaining that it is not known why nature should be harder on the male than the female.

When twins, triplets or other multiple births occur, bull calves are less likely to survive than heifers.

Although nature and chance determine whether the calf will be male or female, Gilmore says the cause of the higher death in bull calves may be associated in some way with the manner in which sex is determined.

Bulletin of the Month

"How to Build a Farm Pond," USDA Leaflet 259, available from the Supt. of Documents, Government Printing Office, Washington 25, D. C.

Properly planned and constructed farm ponds can be a valuable asset to any farm. They can supply water for fire protection, orchard and garden spray, fish production, recreation, waterfowl and other wildlife.

This leaflet explains how to build and maintain a good farm pond, formed by an earthen dam. The recommendations are for ponds that have small watersheds of less than 30 acres.

When writing advertisers please mention Better Farming Methods

How to get MORE SUNLIGHT into farm structures

Because high production of milk, meat and eggs depends a great deal upon good environment, it pays to have farm buildings well daylighted. The building with a sunny interior is more healthful for several reasons—it is likely to be kept cleaner, it benefits from the germicidal effect of sunshine, it uses solar heat to keep interiors more comfortable, it is a more pleasant place for the farmer to work.

There are two ways more sunlight can be brought in:

1. By installing large panes of glass without light-stealing cross members within the windows. These muntins are also gathering places for dust and dirt, which cut down light. With large panes, windows are easier to wash, cleaning is done more often.
2. By installing more and larger windows, as was done in remodeling the barn shown below.

Either way, *Thermopane** insulating glass gives you the ideal window. Composed of two panes, with dry air sealed between them, it overcomes many problems, offers great advantages. Because the inner pane stays warmer, condensation which causes rot and rust is no longer a problem. Windows stay cleaner, gather less light-barring dirt.

Thermopane's warmer inner pane also minimizes downdrafts. More uniform temperature results, increasing the efficiency of the planned flow of air in carrying off moisture. The building is less susceptible to outdoor temperature variations, stays more comfortable.

Thermopane's insulation permits the use of larger windows to take advantage of solar heat in winter. Larger areas of *Thermopane* should be on the south side, with roof overhang that will let in low winter sun, but keep out overhead summer sun.

The advantages of *Thermopane* can be applied to new structures or in remodeling . . . in poultry houses, calf barns, cow barns, milking parlors, milk rooms and hog farrowing houses. *Thermopane* enables you to get the benefits of window insulation without the bother of putting up or taking down storm sash. You can leave *Thermopane* in the year 'round—dirt is sealed *out* from the glass surfaces inside the unit.

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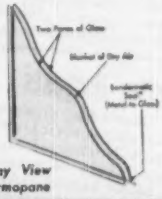
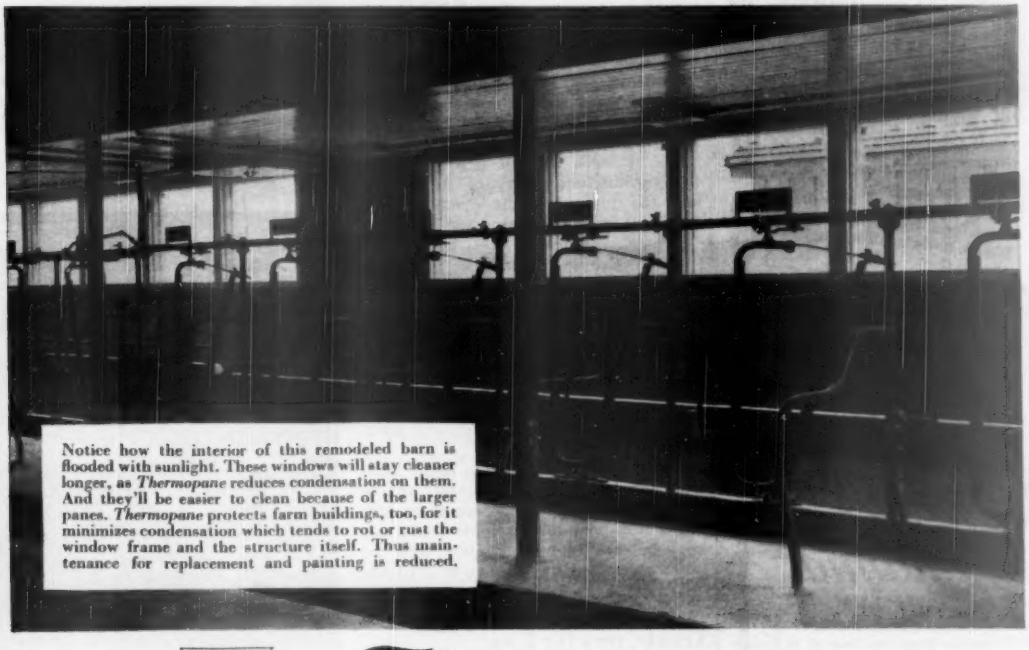


Cutaway View of Thermopane



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AERO CYANAMID, Granular forms soil-building humus when plowed under with cover crops. Nitrogen-rich; ideal for direct application. Also used to control weeds in tobacco plant beds and for other special uses.

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What's NEW in "AG" Chemicals

Discuss Weed Problem

A well-integrated attack of all interested agencies will be necessary if the American farmer is to be freed of a costly weed burden, P. V. Cardon, USDA Research Administrator, U. S. Department of Agriculture, said recently in addressing the Northeastern Weed Control Conference in New York City. This cost runs into billions of dollars each year.

Cardon pointed out that research workers today recognize weed control as a major problem of extremely broad scope which will require for ultimate control the full-scale measures usually reserved for complete eradication programs.

Cardon highlighted one of the fundamental problems in weed control—that of preventing their introduction on farms and ranches wherever possible and of avoiding their spread into new areas once they have been established in others.

He emphasized that our weed population has multiplied and become more disastrous because we have lacked adequate means (1) to control the movement of weed seeds in interstate commerce through shipment of hay, grains and feeds; (2) to prevent the use of weed seeds in feeds without first destroying the germination ability of such seeds; and (3) to control the distribution of weeds in imported grains and roughage.

★

New Dow Fungicide

The Dow Chemical Company has announced that it is currently supplying its dealers with stocks of Thiodow, a new fungicide which has shown excellent results on potatoes, tomatoes, celery and certain other vegetables and ornamentals.

Thiodow will be offered in liquid form. Dow agricultural chemists state that it is easy to handle and measure when adding to the spray mixture, and that it can be used effectively and safely with the insecticides that are used on crop plants.

★

Treat Cows for Lice

Cows with lice make lousy performance records, says T. R. Parks, extension entomologist, Ohio State University.

Since lice are often abundant on cattle during the winter and spring when the hair is long, he recommends treating the animals for lice before severe winter sets in.

Either rotenone or DDT is an effective treatment. If rotenone is used, two treatments, 15 days apart, are necessary. Only one thorough treatment with DDT is required.

★

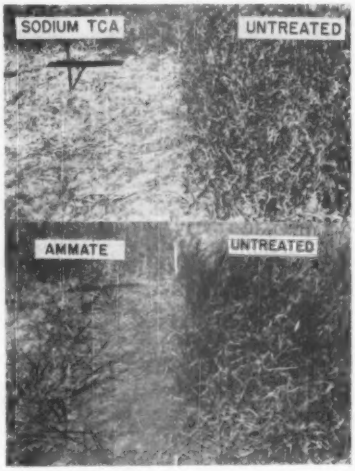
Test Johnson Grass Control

The eradication of Johnson grass from fence rows, roadways, small spots in fields, around buildings and areas inaccessible for machinery, is a serious problem in the Texas Blacklands.

It is from such areas that clean crop land may become reseeded, even after much time and labor have been expended to eliminate this weed. Spraying these areas with a chemical weed killer is a practical method of complete coverage if an efficient and economical compound is used.

Field tests were conducted by the Texas Agricultural Experiment Station during 1949 to determine the effectiveness of several weed killers. Only one application was made so that the length of time materials remain active could be determined.

Spraying was done June 29 with a portable sprayer operating at 25 to 40



The effect of sodium TCA (top) and ammate (bottom) on Johnson grass 4½ months after application. (Photos courtesy Texas Agricultural Experiment Station.)

When writing advertisers please mention *Better Farming Methods*

"Say, I was next!"

pounds pressure. The plants were counted before and after spraying to determine the ratio killed. Results show that sprays are effective in controlling Johnson grass on small inaccessible areas or for spot control in crop land. Sodium TCA is the most effective to date.

Ammate and the trichloroacetates inhibit plant life from 90 to 120 days from the date of application. Rainfall would shorten the effective period. The cost of materials limits spraying operations to small areas.

★

2,4-D Does Good Job in 1949

Results of using 2,4-D to kill weeds this past growing season are described as "very satisfactory" by E. P. Sylwester, extension weed control specialist, Iowa State College.

He credits timely applications, following directions as to dosage, and a fairly normal growing season over most of the state for the good results of using 2,4-D.

In most isolated cases where poor results were obtained from spraying, Sylwester blames failure to follow directions or poorly timed application.

In almost every case, spraying small grain with 2,4-D gave excellent results, from the standpoint of both weed kill and survival of the small grain. Where weed cover was heavy, fairly good stands of red clover came through in sprayed fields. However, farmers who applied 2,4-D in small grain fields containing sweetclover and alfalfa usually lost the legumes.

As a rule, Sylwester says that more damage to legumes results if there is a thin stand of oats and if strong concentrations are used at high pressures.

In corn, some breakage resulted from brittle stalks when farmers sprayed during a period when corn was growing fast. Since this has occurred two years in a row now, Sylwester thinks spraying in corn should be reserved for extremely weedy fields—fields that are weed problem areas every year.

Users of 2,4-D are becoming more aware of the dangers of spray drift and are more careful when applying the chemical.

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For Every Practical Farm Use...

ALONG FENCE ROWS

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IN CERTAIN CROPS

ON RANGES, PASTURES

ALONG DITCH BANKS

ATLACIDE, THE SAFER CHLORATE: Widely used for *non-selective* control of weeds and grasses. Kills bindweed, Canada thistle, Johnson grass and other noxious perennials. Destroys roots . . . kills entire plant . . . discourages regrowth. Applied as water-mixed spray or in dry form. Atlacide is backed by over 18 years of good results, plus an outstanding reputation as "the *safer* chlorate".

CHIPMAN 2,4-D WEED KILLERS: Highest quality. Particularly suited for selective control of broad-leaf weeds in small grain, corn and grass crops. Complete line available in Amine, Ester and Sodium Salt forms.

CHIPMAN 2,4,5-T ESTERS 44%: Especially recommended for certain woody plants resistant to 2,4-D. Can be combined with 2,4-D to control a wider variety of woody and herbaceous perennials. Used as a water or oil mixed spray.

CHIPMAN BRUSH KILLER: A combination of 2,4-D Ester and 2,4,5-T. Controls many species of woody plants as well as broad-leaf weeds. Used as a water or oil mixed spray.

ATLAS "A" WEED KILLER: A 40% sodium arsenite solution. Controls certain aquatic vegetation in lakes and ponds. Used to destroy trees and shrubs; also to control annual weeds and grasses. Creates *no fire hazard.*

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LEAD ARSENATE
LINDANE SPRAY POWDER
PARATHION DUSTS & SPRAYS
PARIS GREEN
P-C-H DUSTS (Piperonyl Cyclonene)
POTATO DUSTS (DDT and Metallic Copper)
SODIUM ARSENITE
TOMATO DUST (Calcium Arsenate & Copper)
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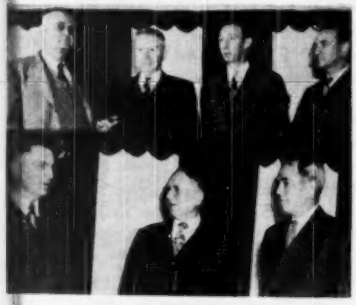
COUNTY AGENT SHERMAN HOAR, Sterling, Colo., is the chairman of the NACAA information committee and makes arrangements for the material that appears on this page.—Editor.



1950 officers of the Alabama County Agents' Association. BOTTOM ROW (l-r): L. T. Wagnon, Hartselle, secretary-treasurer; L. S. Edmonson, Montgomery, president; and A. S. Matthews, Anniston, vice president. Directors are, TOP ROW (l-r): A. A. Lauderdale, Columbiana; H. J. Carter, Troy; O. C. Helms, Grove Hill; and J. E. Morris, Wetumpka.

COUNTY AGENT F. N. FARRINGTON, Dadeville, Ala., sends information regarding the annual meeting and new officers of the Alabama association. He states that they had a fine meeting and closed the year with a great degree of success. "Our group really enjoyed the national convention, and they are looking forward to being in Chicago next November," says Farrington.

PRESIDENT CARTER'S recent letter to officers, directors and committee chairmen states that he, Ed Bay and Truman May spent considerable time during the International Stock Show making arrangements for the 1950 convention. Rex says that as it now stands, the executive committee and directors will meet on Saturday, November 25, and there will be a tour on Sunday, under the direction of the Illinois county agents.

Sunday evening will be the time for a joint reception and get-together with the home demonstration and 4-H club agents in the east and west lounges of the Edgewater Beach Hotel, preceded by a joint dinner of the officers and directors of the associations. The convention will officially open Monday morning, November 27, with all sessions in the ballroom of the Edgewater Beach Hotel.

COUNTY AGENTS from Wyoming, Nebraska, New Mexico, Utah, Oklahoma, South Dakota and Colorado were in evidence during the National Western Stock Show at Denver, January 13-21. The agents were busy with 4-H club activities, including the exhibiting of livestock, junior livestock judging contest, the 4-H club round-up, and the Pure Seed Show. While at the Denver show, we had a visit with Bernie Trierweiler, Torrington, Wyo., and learned from him the officers of the Wyoming association for 1950. The officers are: Jim Nicholls, Cody, president; Harold Hurich, Pinedale, vice-president; and Arvil Ashment, Basin, secretary-treasurer.

LAVERNE KORTAN, Hand, S.D., county agent, interrupted his busy schedule during the Denver Stock Show to visit and tell about his county livestock association sponsoring trips to the show for 4-H club members.

FRED C. JANS will teach a summer course in "fishing" at the Colorado Extension Summer School, according to information in the January issue of the Colorado A & M News. Pictorial proof of Jans' piscatorial prowess is included with the announcement.

It is expected that Jans will conduct demonstrations for fishermen in addition to teaching a course in extension supervision during the first three weeks of extension summer school. Jans is field agent for the USDA Extension Service, Washington, D.C., and applications for the fishing course should be addressed to him at Washington. Enrollment is said to be limited to 100.

MANY county agents of the west were saddened to learn of the death of Mrs. Albert E. Smith, wife of the county agent at Tooele, Utah. Mrs. Smith died January 14. She was active in many community activities and had attended several NACAA conventions with her husband, who this year is serving as chairman of NACAA's farm credit committee. Mr. and Mrs. Smith both attended the 1949 convention at Denver.

The 1950 officers of the Iowa Association of County Extension Directors are (l-r): Paul W. Watts, A. T. Goettsch, J. R. Underwood, Adrian Gamble and W. H. St. Clair, directors; Jay I. Partridge, secretary-treasurer; H. J. Montgomery, president; E. J. Weigle, vice president; A. R. Griffith, C. E. Herriott, W. A. Gardner and T. N. Nelson, directors.

Advanced Row Crop Features Make Advanced Practices Easier!

Following a rigid soil-saving program calls for modern, maneuverable equipment. That's why an Oliver Row Crop "77" is the perfect choice for today's diversified operations. Its six forward speeds and husky 6-cylinder engine provide the proper working pace and power for a full range of approved conservation practices—from terrace construction to caring for cultivated crops on the contour.

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A parallelogram coupling keeps Oliver tractor mounted tilling, planting and cultivating tools on an even keel. These diagrams show how the gangs always stay level and are permitted to float independently.

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CAN SPRAY 40 ACRES AN HOUR

George Lambert is one of the top-notch spray experts in Northern California...and he builds his own spray rigs.

This picture shows one of the George Lambert rigs spraying a grain field for weed control. This rig has a 68 foot boom spread and can spray up to 40 acres an hour

"HERE'S WHY I USE ORTHO WEED KILLERS..."

—George Lambert

"YES, I'M REALLY SOLD on ORTHO products—especially ORTHO Weed Killers like WEED-B-GON 64. I consider ORTHO Weed Killers to be the best on the market for 4 reasons:

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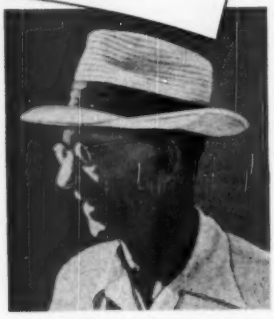

Mr. Lambert has been a commercial sprayer for fourteen years in the Yuba City-Marysville region. This year he will spray about 10,000 acres with ground rigs

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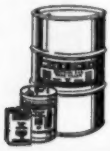

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Washington News

(*Continued from page 4*)

tate to point out these facts of life at every opportunity.

The Secretary already has made a fast start. He delivered a telling blow on Capitol Hill when he pointed out that present law permits him to pay freight on potatoes for livestock feed . . . but prohibits payment of such costs when spuds are to be used for human food.

Central theme of the administration drive for farm support is expressed in a leaflet headed, "The Brannan Farm Program—What's In It For You." The leaflet first came to light last month at the Democratic rally in Raleigh, N.C.

CONGRESS WON'T ACT ON FARM BUREAU DIVORCE—Chances are now 10 to one that Congress won't act at this session to divorce the Farm Bureau and Extension Service by federal law. Reason: Reluctance of the National Grange to push for the legislation in opposition to the Farm Bureau.

Sessions between Grange's Goss and Bureau's Kline to work out a compromise have not borne fruit. Kline, who favors state action, if any, thinks the Bureau could beat down any attempt on Capitol Hill to put through federal legislation.

The Grange doesn't talk about it, but has another reason for dragging its feet. Namely, a disinclination to join the Farmers Union in a fight against the Bureau.

HERE'S A TIP—Ever get an itch to speculate on the commodity markets? Well, don't. At least, that is the implied advice contained in a recent report from the Agriculture Department.

The USDA survey indicates that both small and large operators have about one in six chances of coming off with a profit in grain futures. Losses of smaller speculators were about $12 million, compared with $2 million profits out of almost 9,000 cases studied.

High losses are attributed mostly to a tendency for speculators to take their profits, but let their losses run. (In other words, if you must speculate, don't hesitate to close out loss positions.)

Only 29 percent of grain business managers profit at speculation, according to the USDA survey. Percentages for other categories: retired persons, 27 percent; professional people, 24; and manual workers, 22.

Farmers come off the worst of all, in the Department study. Only 21 percent show profits!

BUG KILLERS AND FRUITS-VEGETABLES—How much of which pesticides can be sprayed upon fruits and vegetables without harming consumers?

That is the key question now being aired in Washington hearings before the

Food and Drug Administration. Testimony is being taken from growers, scientists, manufacturers and officials.

Farm leaders are hopeful that the hearings will answer these specific questions for growers: Which spray is best for each fruit and vegetable? How much of potentially harmful residues can be removed? How much can be consumed without harm?

New government rules, regulating spray use, probably will be written this year . . . but hearings won't be completed in time to affect 1950 production.

All sprays and dusts are under scrutiny. Close attention is to be given to the new chlorinated hydrocarbons. These include DDT, methoxychlor, toxaphene, chlordane, DDD, benzene hexachloride and lindane.

Livestock is not involved in the current investigation.

NEW PARITY FORMULA—The new parity formula, approved last year, only recently has been worked out by the BAE. Based on average prices over the past 10 years, and including costs of hired labor, it puts livestock producers in a relatively stronger position. Parity prices for livestock products are higher under the new than the old formula. Reverse is true of most field crops.

FOOD STOCKPILES MOUNT—What to do about the nation's ever-mounting stocks of farm commodities is causing nightmares for farm leaders and USDA officials.

More than $4 billion worth of commodities may be held by USDA's Commodity Credit Corporation come next July. Much of the total won't have a ready market.

The obvious difficulties that lie ahead are recognized by members of both parties on Capitol Hill. Democrats and Republicans have backed Brannan's urgent request for a $2 billion increase in CCC lending authority.

Recently-announced price lists on government stocks . . . both for home use and export . . . are not expected to move many commodities. Reasons: the dollar shortage abroad; the fact that the law prohibits domestic sales at less than support prices, plus 5 percent, plus "reasonable carrying charges."

Wireworm Folder Available

Treating seeds of corn, sugar beets, cotton, beans and other crops with lindane insecticide has proved successful in controlling wireworms and other soil insects. A new folder just issued gives full details and directions for this relatively inexpensive method of controlling these insects.

The folder is available for the asking by writing to California Spray-Chemical Corp., Richmond, Calif.

Vo-Ag Teachers!

Help Farmers Save Money!

By LOUIS WEISBERG

President and Founder of the Whitehill Farm Bookkeeping System

● LACK of adequate bookkeeping methods cost farmers thousands of dollars yearly.

This is not guesswork but hard fact based on an intensive two year study by Whitehill Systems.

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That is why we feel we can call on you to assist us in your spare time in making the many benefits of the Whitehill System available to farmers everywhere. It is a service which will bring rich reward in the gratitude of your friends alone. Of course, we are prepared to compensate you liberally for your time and efforts.

The service we ask you to render is to help us properly install the system which then operates almost automatically. For it is simple to understand, takes but a few minutes a day to keep up to date and gives a complete record of farm income and expenditures at a glance. All this, in addition to the outstanding feature of a free complete 2 year tax service at no extra cost. The tax form is sent into Whitehill Tax Accountants in New York who complete it, and return it with all proper deductions taken and with the computed tax. The cost of this system to the farmer is $49.50 complete.

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Steer dying from vitamin A deficiency. Notice the swollen legs, rough, dry hair coat and discharge from eyes. Three to five pounds of good hay would have prevented this condition.

Nutritional Diseases of Farm Animals

By L. L. MADSEN
Head, Animal Husbandry Dept.
Utah State Agricultural College

● ADEQUATE nutrition is an important asset in maintaining animal health. Nutritional diseases are often caused by a failure of the ration to supply sufficient quantities of one or more of the essential nutrients, or to a failure of the animal to utilize these nutrients. In cases where a ration is deficient in several nutrients, all of them must be supplied before optimum results will be obtained.

Many laboratory methods have been perfected for the detection of nutritional deficiencies, but the recognition of specific symptoms in animals is still the most widely used means of diagnosis. In this short review, only a few of the important nutritional diseases can be discussed.

Young Animals Need Vitamin A

Farm animals of all ages may suffer from vitamin A deficiency, but young animals are particularly susceptible. New born calves have low vitamin A reserves since the pregnant mother, even on a high carotene intake, does not supply vitamin A to the fetus much faster than it is needed.

Cows receiving an insufficient amount of vitamin A may abort or have calves that are weak or blind at birth. Such calves may die within a few days; however, the cows themselves often appear normal, except for a possible increase in number of retained placentas. Diarrhea (occasionally constipation), pneumonia, blindness, dilated pupils, convulsions, kidney damage, incoordination, rough coat, failure of appetite, and a slow growth or weight loss followed by death, are characteristic of vitamin A deficiency in calves.

Night Blindness Common Symptom

One of the first symptoms of vitamin A deficiency that can be detected by a careful observer is night blindness, or an inability to see well in dim light, such as during the late evening. This can be detected by driving animals about in a corral and noting if they stumble over, or bump into, objects placed in their way.

Various degrees of night blindness can be detected, and the condition usually gets progressively worse. Night blindness may progress to permanent blindness, caused by optic nerve injury, if the deficiency continues in young animals. Blood analysis for carotene and vitamin A also proved to be of value in diagnosing vitamin A deficiency in cattle.

Bulls may lose their reproductive ability in severe vitamin A deficiency, but damage to sexual organs is not always permanent. In a recent study, young beef bulls were subjected to a period of vitamin A depletion by feeding a ration low in carotene. It was found that sexual activity and ability decreased rapidly with the development of symptoms of vitamin A deficiency. Semen samples, collected as the depletion progressed, showed marked increases in percentage of abnormal spermatozoa and cellular debris with progressive decline in motility.

Fattening and breeding cattle often develop swelling of the legs, shoulders, brisket, hindquarters and elsewhere when suffering from advanced vitamin A deficiency. That swelling disappears quickly when a good source of carotene or vitamin A is provided.

Sheep also develop night blindness from vitamin A deficiency and pregnant animals may abort or give birth to weak offspring which die shortly afterward. Other symptoms in sheep are loss of appetite, poor condition and weakness.

Swine show incoordination and convulsions similar to calves on a vitamin A deficient diet. They also may have impairment of vision. Vitamin A deficient sows may fail completely in reproduction or give birth to blind or eyeless pigs. Other congenital abnormalities noted in young pigs born to vitamin A deficient sows are cleft palate, harelip, accessory ears, misplaced kidneys and subcutaneous cysts.

Horses on vitamin A deficient rations have rough, scaly hoofs, a rough coat and develop night blindness.

Carotene Required in Diet

A lack of sufficient carotene in the diet is the most common cause of vitamin A deficiency in farm animals. Conditions under which this deficiency appears most frequently in cattle are (1) on the range during drought; (2) in the feedlot when consumption of concentrates is high and the supply of roughage is either low or of poor quality; (3) wintering animals on low grade roughages, such as straw or poorly cured hay; and (4) calves fed skim-milk or calf meals without good hay or other source of vitamin A.

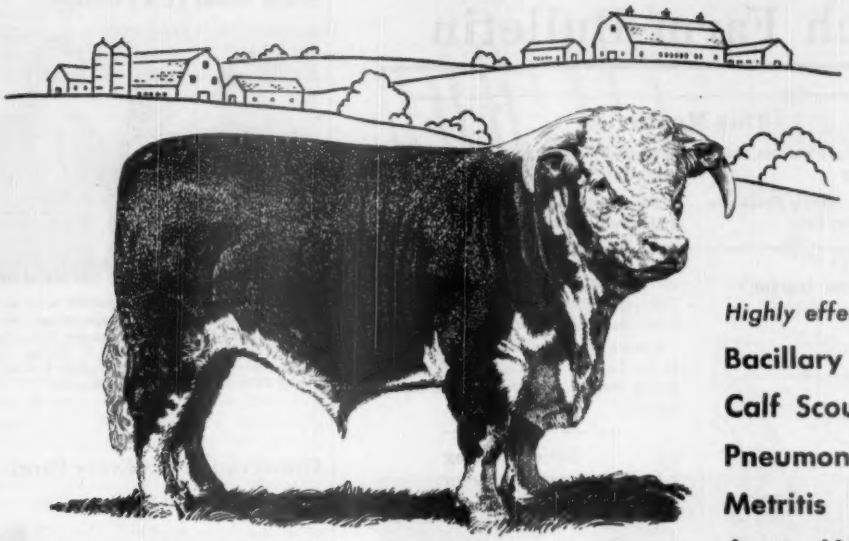
Good pasture or properly cured hay of the current season's crop during drylot feeding will prevent or cure this deficiency. The National Research Council recommends 5.5 mg. of carotene or 3,000 I.U. of vitamin A daily per 100 pounds live weight for cattle for moderate storage and reproduction.

Vitamin B Essential to Growth

The number of recognized components of the vitamin B complex has increased

(*Continued on page 46*)

Iodine deficiency in a lamb. The skin has been removed to show the unusually large thyroid, commonly known as goiter.



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SULFAMETHAZINE *Lederle*

Highly effective against

Bacillary Enteritis
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Pneumonia
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Acute Mastitis
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One prompt treatment with SULMET Sulfamethazine *Lederle* frequently restores normal temperature and overcomes infection in farm animals suffering from an acute bacterial disease. If necessary, successive treatments should be given once a day.

SULMET Sulfamethazine at recommended dosage is effective for 24 hours. Its fast action results in shortening the period of sickness and costly losses from prolonged illness are avoided. All things considered – low and infrequent dosage, rapid recovery, time and labor saved – SULMET Sulfamethazine is the most soundly economical of the miracle sulfas.

In addition to udder infusions of AUREOMYCIN Hydrochloride OINTMENT *Lederle*, cows suffering from acute, septic mastitis should be treated with SULMET Sulfamethazine, by injection or by mouth.

SULMET Sulfamethazine is available in several forms to suit your need: POWDER, TABLETS, OBLETS*, SOLUTION INJECTABLE (available by or on a veterinarian's prescription), EMULSION, SOLUTION 12.5% (for use as a drench).

For maximum efficiency in the use of SULMET, as well as for best management practices and disease-control procedures, consult your veterinarian.

Read carefully the circular enclosed in the package for *best results* in the use of this product.

Free literature gladly sent upon request.

*Reg. U.S. Pat. Off.

Clip this coupon and send to us at the address below for your FREE COPY of "COMMON DISEASES OF LIVESTOCK."

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ANIMAL INDUSTRY SECTION

LEDERLE LABORATORIES DIVISION
AMERICAN *Cyanamid* COMPANY
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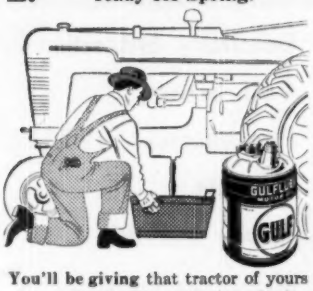
March Farm Bulletin

This Month:

1. Getting your tractor ready for Spring.
2. Avoiding furrow breaks in rear tractor tires.
3. Easier steering for your tractor.
4. Something new in farm greases.

1. Getting your tractor ready for Spring.



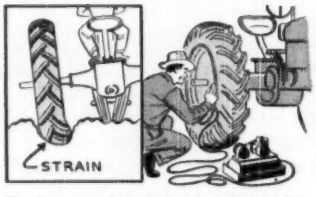
You'll be giving that tractor of yours plenty of hard work this Spring, plowing and discing for hours at a time. You'll want to be sure it's in tip-top shape.

Here's a good way to flush out the winter oil and sludge: 1. Run the motor until warm, then drain. 2. Put in 3 quarts of clean oil and run the engine for 4 minutes. 3. Drain and refill with summer-grade Gulflube Motor Oil.

You can buy Gulflube in the new 5-gallon size now, and get two things:

A premium-type oil, refined by Gulf's famous Multi-Sol Process. And a rugged all-metal utility can, a strong one you can bang around plenty. It's a good deal. Use the oil—keep the can!

2. Avoiding furrow breaks in rear tractor tires.



Twelve pounds inflation is sufficient for ordinary field work. But when you're plowing, it's a good idea to add 4 lbs. more air pressure to the furrow wheel. This offsets the extra weight thrown on it by the tilt of the tractor.

Otherwise, the sidewall might buckle in the furrow, eventually breaking the casing cords and shortening the life of the tire.

3. Easier steering for your tractor.

Sometimes good handling of your farm tractor is even more important than good traction. And for easy handling, you can't beat the Gulf *Front* Tractor Tire.

The raised center rib gives positive steering in soft soil, and the tire won't cut in because of its extra-wide tread.

Double ridges grip the furrow wall when you pull out to turn. Tough Gulf Tractor Tires, front and rear, will help you get more work out of your tractor this Spring.

4. Something new in farm greases.

It's the new Gulf All-Purpose Farm Grease. And it does every grease job that comes up, whether it's preventing rust, or lubricating the water pump or manure spreader. It has passed every test in the book, including wheel-bearing and water-leaching tests.

Ask your Gulf dealer about this handy new All-Purpose Farm Grease.

GULF Farm Aids

Scout Meets FFA President

A Boy Scout and an FFA member meet at the American Institute of Cooperation annual meeting held in Chicago, January 9-13, (l-r): Everett Blair, Polo, Ill.; C. C. Parks, rural Scout leader, Polo, Ill.; and George Lewis, national FFA president, Hersanda, Ill.

★

Conservation for Every Farm

(*Continued from page 24*)

over the farm together, the SCS technicians and class instructors explained land capabilities and soil groups and how they are related to land use and soil conservation. They showed and explained to the students how land capabilities could be used as the basis for good land use. They made borings in the soil with soil augers; they measured slopes and estimated soil losses from erosion.

The best use and treatment for each field was explained as they went from field to field. The "Guide to Land Use and Treatment for the Smith County Soil Conservation District" served as an excellent reference in these discussions. This guide was prepared by the SCS for district supervisors, SCS technicians, and other agricultural workers who advise Smith county farmers about land use and treatment.

Wednesday night, the group and invited guests met at the high school cafeteria for a squirrel supper. The squirrels, 35 of them, were supplied by sportsmen among students and instructors. Guests included W. M. Hardy and H. F. Helfenbein of the state office of SCS, County Agent Copeland, School Superintendent J. B. Smith, Jesse Safley, farm editor, Nashville Banner, and John McDonald, radio farm director, WSM.

James Kemp, president, local chapter of Future Farmers of America, served as master of ceremonies. After several short talks, the group was shown an appropriate moving picture. The supper meeting climaxed the week's activities but did not finish them.

"Never heard so much talk about one supper in all my life," was the comment by a lady teacher in the Gordonsville School.

Radio listeners heard John McDonald tell about the Smith county event over his WSM "Noontime Neighbors" program, and Nashville Banner readers saw

When writing advertisers please mention *Better Farming Methods*

pictures and a story of it prepared by Jesse Safley.

Interest was high as the soil scientists completed the mapping on Friday and started back to their various stations over the state. Soon after the field mapping was completed, each student and each farm owner was given a conservation survey map of his farm with land capabilities shown. Each student, with his father or the farm owner, will work out a complete-farm soil and water conservation plan as a part of his school work. When the plans are ready, Charlie Ogles and Bob Dudney will review each plan and visit each farm to help with any questions or changes that are needed.

And as the weeks go by, students and their fathers will learn soil and water conservation by applying planned practices to their own farms. In the class rooms, Ogles and the other instructors will have live, real problems with which to help students. And there'll be many a field study on local farms where conservation is scientifically planned and scientifically applied.

SCS technicians in the Smith County Soil Conservation District will aid teachers, students and farmers, as their help is needed in carrying the undertaking to completion, just as they helped get it started.

Yes, there is still a lot of room for dreaming and real cooperative effort by agricultural workers in serving the farm people all over this country. We think Charlie Ogles and the others in Smith county, Tennessee, are demonstrating that fact pretty well.

★

Report Gives Tractor Data

The extent to which tractors are used on the nation's farms, together with the quantity and kind of motor fuel and the amount of motor oil used per farm tractor, are shown in a research report published by the USDA. Estimates are given of tractor numbers, tractor fuel consumption, motor oil consumption, and annual use of tractors in 1947 with comparisons for other years.

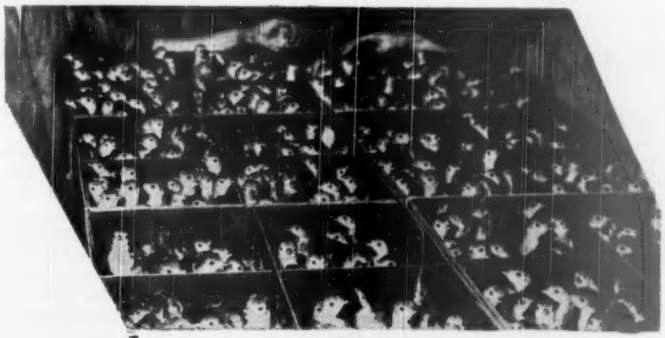
The report, "Fuel and Motor Oil Consumption and Annual Use of Farm Tractors," was prepared by the Bureau of Agricultural Economics. It gives the data about tractors, by type, age and size. According to the report, 80 percent of all motor fuel used in tractors in 1947 was gasoline. Diesel fuel was little used by wheel tractors, most of this kind of fuel being used in crawler tractors. And diesel fuel was used to the greatest extent by the newer crawlers.

Annual use was found to vary with the age and size of tractors. New tractors were used more hours than were the older ones, and large tractors, which were usually found on farms of above average size, were used more hours than were the medium and small tractors.

QUALITY and VALUE

WIRTHMORE TURKEY STARTING RATION

The latest know-how in QUALITY-CONTROL packs extra growth value in this feed.



IF YOU ARE GOING TO RAISE POULTS THIS YEAR YOU WILL WANT TO TRY THE NEW *WIRTHMORE TURKEY STARTER* FIRST . . . IT IS AVAILABLE NOW AT YOUR WIRTHMORE DEALER'S.

WIRTHMORE TURKEY STARTING RATION

AVAILABLE IN CRUMBLES AND PELLETS AS WELL AS MASH

New ingredients contribute nutritionally to a degree never known before in Wirthmore history. New mixing and milling methods combine with quality control to give you not only the 1950 yardstick for starting feed *quality* — but they will give you the new yardstick for starting feed *value* as well.

IF QUICK, RUGGED GROWTH IS WHAT YOU WANT IN YOUR TURKEY STARTER, SEE YOUR WIRTHMORE DEALER. DISCUSS YOUR FEEDING REQUIREMENTS WITH HIM. ASK FOR DESCRIPTIVE LITERATURE.

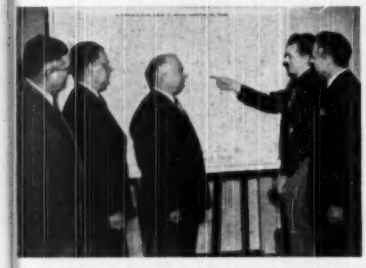
WIRTHMORE®

MANUFACTURED FOR CHAS. M. COX CO., BOSTON

Foundation Holds Meeting

Plans for 1950 were completed when representatives of donors to the FFA Foundation and the board of trustees of the foundation met in Washington on January 27.

The foundation has made steady growth in the number of donors and funds since the organization was first organized in 1944. Today, 68 commercial concerns are contributing to the foundation.



John H. Kraft (center), president, Kraft Foods Co., and new chairman of sponsoring committee, FFA Foundation, learns from George Lewis, national FFA president, the distribution of foundation awards. Others in the picture are: (l-r) W. T. Spanton, foundation president; D. J. Howard, foundation treasurer; and A. W. Tenney, foundation secretary.

A new safety program is planned for 1950. For the first time, local chapter winners in most of the programs will be given a medal.

The $85,250 budgeted for FFA awards in 1950 is a new record for the foundation, made possible by the promotion program of the foundation's sponsoring committee, which consists entirely of the donor representatives.

The committee has secured many new donors for the foundation, and it is up to the FFA to keep those new donors informed about the work so their interest will be maintained.

Local chapter advisers can exert a tremendous influence in holding and increasing the interest of donors by urging their award recipients to write the donors, thanking them for making the award possible. Lists of donors will be provided with each award made, whether on local, state or national level.

The six national FFA boy officers were introduced at the meeting by George Lewis, national FFA president. An illustrated report on what the foundation is doing was given by A. W. Tenney.

The donors voted to extend a word of appreciation to Frank Jenks, International Harvester Co., who headed the sponsoring committee in 1949. Jenks was unable to attend the meeting due to illness.

John H. Kraft, president, Kraft Foods Co., was elected chairman of the sponsoring committee for 1950.

A banquet sponsored by the Foundation for American Agriculture in the honor of donor representatives, board of trustees and national FFA officers, was held in the evening. Highlights of the program were talks by the national FFA boy officers.

Group picture of the people that attended the joint meeting of advisory committee and board of trustees of Future Farmers of America Foundation in Washington, D. C.

Pictures Promote FFA Work

Almost every instructor for an agriculture teacher "workshop" is expected to come up with at least one ingenious method or device which the FFA adviser may take home and try out. Whenever something one of these workshop teachers dreams up actually works, he feels very much encouraged.

Last summer at a session for members of the California Agriculture Teachers' Association on public relations, it was suggested that chapters try out a regular picture display service in one or more downtown store windows. The 8 x 10 picture should be changed as frequently as time and new subject matter make possible.

Warren T. Smith mulled over the idea and found it promising. He had three picture boards made up with the caption, "What's New With Madera Future Farmers." The picture and its underline are changeable. These went into the show windows of three Madera stores.

Picture board display in store, sponsored by the Madera, Calif., FFA Chapter. The picture and caption are changeable.

"It really works," he reported recently to Special Supervisor George P. Couper, who suggested the idea. "There are people looking at these pictures all of the time. They really get the crowds."

The idea isn't patented and could be tried out anywhere in the United States.

IMPORTANT PRICE REDUCTIONS!

NOW MORE THAN EVER BEFORE, IT PAYS TO RECOMMEND AND USE

PENSTIX -SM and PENSTIX

FOR SAFE, EASY, ECONOMICAL MASTITIS CONTROL

PENSTIX-SM

the new combination antibiotic therapy

(Penicillin plus Streptomycin)

For the more complex infections caused by Streptococcus agalactiae and coliform bacteria. Double-barreled action and effectiveness. 25,000 units of penicillin with 25 mg. streptomycin.

	OLD PRICE	NEW PRICE	THE FARMER SAVES
Vial of 6	$4.00	$2.34	$1.66
Bottle of 12	6.80	3.89	2.91

PENSTIX-SM and PENSTIX won't harm the animal or discolor the milk. Both in easy-to-use self-lubricated bougies. Keep anywhere without refrigeration. Each bougie in an individual sanitary wrapper.

PENSTIX

(Penicillin 25,000 unit strength)

Effective treatment in mastitis caused by Streptococcus agalactiae. Now you are able to use the product that best suits the job.

	OLD PRICE	NEW PRICE	THE FARMER SAVES
Vial of 6	$2.50	$1.89	$ .61
Bottle of 12	4.25	3.19	1.06
Bottle of 25	8.00	6.00	2.00
100 (4 bottles of 25)	30.00	22.50	7.50
(Penicillin 100,000 unit strength)			
Vial of 6	$5.40	$4.05	$1.35

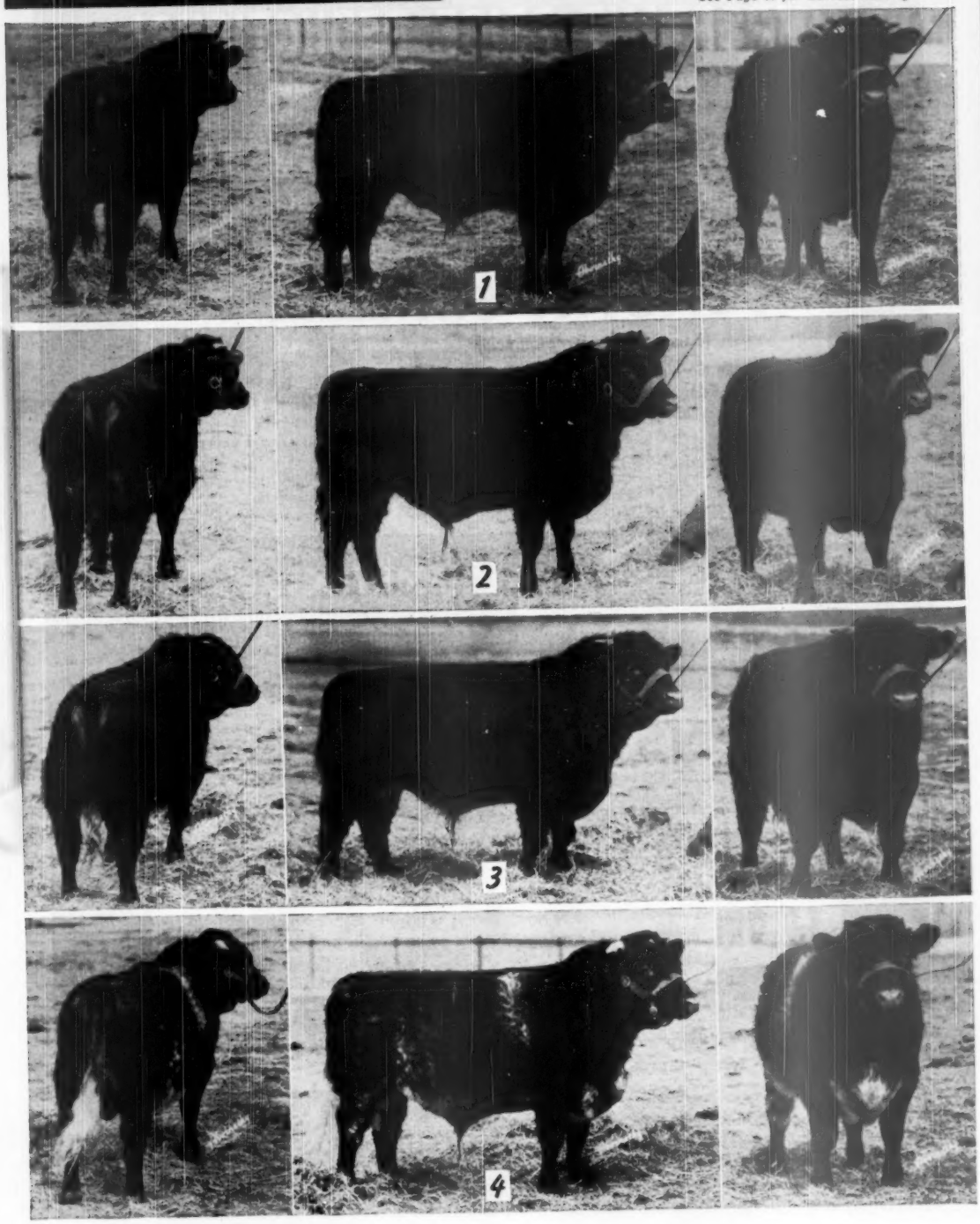
Obtainable through your veterinarian, drug store, animal health products center.

Wyeth Incorporated, Philadelphia 3, Pa. Wyeth

Judging PICTORIAL

HOW WOULD YOU PLACE THESE SHORTHORNS?

See Page 68 for Correct Placing



Another Look at Mastitis

(*Continued from page 22*)

milked out. Another result of improper milking is injury to the ends of the teats. Teats exposed to the extensive action of milking machines when milk is not flowing through them are in danger of being injured and are likely to become painfully sensitive. The presence of milk flow seems to act as a cushion and lubricant.

Inadequate nutrition concerns something that seems to be in the picture, even though the information is insufficient to draft definite control procedures. Indications are that the main weakness likely to exist is insufficient ingestion of good quality roughage.

Infection Control Program Works

It is well worthwhile to enlist the services of a veterinarian equipped to assist in directing the many details of a control program that need attention.

The purchase of infected cows should be avoided. Clean hands and equipment alone should be used on healthy cows' udders. It is preferable to milk healthy heifers first and finish with cows known to be infected. These procedures form the basis for infection control.

Results can be obtained in controlling the ravages of streptococcic mastitis, which is the most common type in farm herds. However, this cannot be accomplished without a desire to do so on the part of the persons working with the herd.

Herds which have infections other than streptococci often have very serious and discouraging conditions with which to cope. Staphylococcic infections are particularly difficult to control. While the same recommendations as given for streptococcic mastitis are in order, it is more difficult to accomplish good results. Adequate laboratory facilities for use in identifying the cows which are shedding the organisms are almost imperative.

Prevent Udder Injury

Prevention of injuries to udders and teats centers around proper construction of stalls, avoidance of slippery floors, removal of high door sills and similar obstructions; keeping the animals out of mudholes and away from trash and loose wires; and provision of adequate bedding. Pen type barns, when feasible to use, may offer some possibilities for improvement over some stanchioning methods of housing in the control of active cases of mastitis.

There is no place for rough treatment of cows! By handling them quietly and gently they can be helped to force down their milk. Then they should be milked out as completely and quickly as possible. Withhold placing the machine on the teats until the milk is let down. As each quarter is milked out, remove the teat cup from it.

Make Feed Adjustments

When faced with the problem of active cases of mastitis, common sense demands that excessively heavy feeding be reduced in order to avoid overworking an injured gland. It also may be of some assistance in bringing the problem under control if the animals are encouraged to consume plenty of good quality roughage.

Advantage also may well be taken over a period of years to utilize the inherent ability to resist mastitis which is enjoyed by animals of some lines of breeding, and to avoid families whose members are prone to suffer excessively.

How to Treat Chronic Cases

The estimated future production of the cow and the reduced risk to the healthy animals in the herd should be considered in deciding whether to treat infected animals.

Udder infusions or injections of various drugs and antibiotics for chronic mastitis are valuable aids to control but

(*Continued on page 49*)

100 Years of Progress

SHORTHORNS and POLLED SHORTHORNS

(Naturally hornless)

America's oldest and most profitable breed of cattle . . . offer greater size, fastest gains, quiet, easy-handling dispositions and widest adaptability.

EXTRA WEIGHT means EXTRA DOLLARS. Check modern Shorthorn and Polled Shorthorn performance records . . . including carlot and single steer Grand Championships OVER ALL BREEDS . . . FOR EXTRA GAINS . . . and ideal combination of beef and milk for EXTRA PROFITS.

WRITE for illustrated literature and lists of member-breeders who can supply you with seed stock.

Subscribe to our breed publication SHORTHORN WORLD, $2.00 yearly.

AMERICAN SHORTHORN BREEDERS' ASSOCIATION

Dept. BFM **Stock Yards, Chicago 9, Illinois**

What's New In . . .

Beef Husbandry

By O. B. ROSS
Oklahoma A & M College

● A CHANGING type of agriculture places the emphasis upon different aspects of the beef cattle industry today as compared to two decades ago. The new farm program, together with increased interest in soil building, has taken many acres out of grain production and provided pastures which must be harvested by cattle or sheep.

This, together with changes in the beef cattle industry itself, has stimulated new interest and research in the following fields:

1. Production of marketable beef with grass alone.
2. Improved varieties of grasses and improved pasture mixtures.
3. Pasture management.
4. Methods of management of cattle under a grassland system of production.
5. Improved systems of beef cattle breeding.

Most experiment stations have been studying the grass-beef cattle problem for several years. Beef gains of 300 to 600 pounds per acre of pasture have been reported. Even at present prices, this would mean a gross return of $60 to $120 per acre of pasture and the harvesting is done by the cattle.

We now know that good land will produce good pasture just as it will produce grain crops and that best pasture gains are secured on the better soils of each farm. The idea of giving the cows or steers the poorest field on the farm for pasture is proving to be costly. Use good soil and good varieties of grasses and legumes and large gains of beef per acre can be expected.

Fertilizers Double Beef Return

Many soils need to be fertilized for best results. Experiments at the Oklahoma Agricultural Experiment Station have shown that judicious use of lime and phosphorus will more than double the beef return per acre of pasture; and this, coupled with the use of improved pasture plants and mixtures, has more than tripled the beef gain per acre as compared to pastures not fertilized.

Improve Pasture Mixtures

Most experiment stations are studying the problem of improved pasture plants and pasture mixtures. Work is continually in progress by the plant breeders to produce improved varieties and selections of pasture plants. New grasses are being introduced from other areas. Such species of grasses as Kentucky 31 fescue, alta fescue, Lincoln brome and other improved brome grass selections, improved selections of orchard grass, coastal bermuda, Turkestan bluestem and many others are doing much to increase the production of human food per acre of land.

Improved selections and higher producing introduced species of legumes are doing much to provide more and better pasture forage. This type of research has shown that certain improved varieties of pasture plants and improved pasture mixtures will increase the beef return per acre from one-third to one-half over that of our common species and pasture mixtures.

Weed Control Pays

Brush and weed control has more than doubled the beef produced per acre of pasture. Mowing of pastures in western Oklahoma has not only increased the carrying capacity of the pastures but has improved the stand of grass and improved the soil.

Brush and weeds compete with the better grasses not only for plant nutrients in the soil but also for water during dry seasons. Control of the undesirable plant species in pastures has increased the number of good pasture plants as well as increased the vigor and forage production of those plants.

Chemicals such as 2,4-D and others are now doing the job once delegated to a team of horses and a mower. These chemicals, when properly used, kill undesirable species of pasture plants such as weeds and brush, but do not affect the good grasses. Throughout the country, chemicals are being used more extensively to control weeds which "sap" our soils and starve our beef and milk producing forages.

Self-Feeding Salt Popular Practice

Such practices as self feeding a mixture of salt and protein supplement is becoming increasingly popular. This is a labor-saving practice, since the protein supplement can be self fed rather than hand fed each day during the winter. The salt mixed with the protein supplement makes the mixture less palatable than straight supplement and, consequently, the cattle won't eat as much as they will of straight meal. The proportion of salt to meal can be adjusted at any ratio to provide for a daily consumption of protein from one to four pounds per beast per day.

Experiments at the Southern Great Plains Field Station at Woodward, Okla., showed that steer calves grazing native grass in the winter and self fed a mixture composed of four parts cottonseed meal and one part salt made a total winter gain of 50 pounds while those hand fed two pounds of cottonseed meal per day gained 62 pounds during the same period. The self fed group of steers consumed two pounds of meal and ½ pound of salt daily during this self feeding trial. The steers were grazed during the summer following the two methods of wintering and each group gained 254 pounds during the summer.

Self Feeding System Saves Labor

Those hand fed made a total yearly gain of 316 pounds and those self fed the salt-meal mixture gained 304 pounds during the year. The difference in total yearly gain was only 12 pounds. No detrimental effect could be detected in the group which consumed the large quantities of salt. Considerable labor was saved by the self feeding system.

Within the past year or so, the United States Department of Agriculture, together with many state agricultural experiment stations, has established beef cattle breeding experiments to study methods of inheritance and systems of breeding. This is a very noteworthy undertaking and should provide tools by which we can improve the efficiency of our beef cattle as we have improved and are improving our farm crops and pastures.

★

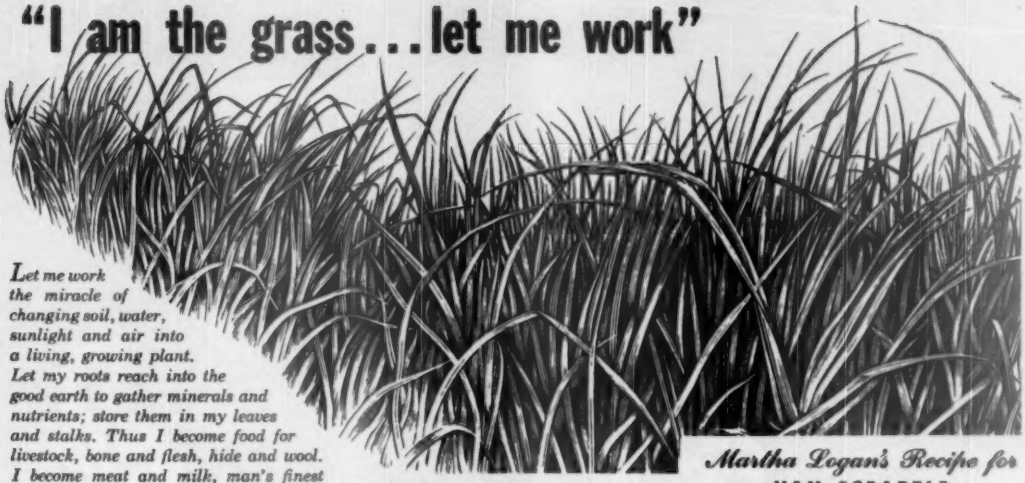
Put Farm Shop in Order

The safety and usefulness of a farm workshop depend upon the condition and arrangement of the shop and its equipment. These facts are emphasized by William A. Calvert, extension agricultural engineer, University of Delaware, who urges farmers to give attention now to the possible need for remodeling or rearranging their workshops. Now that the rush of the growing season is past, the workshop should be put in order.

The well-equipped farm shop will serve as the center of activity for a great variety of farm repair and construction jobs. Auto and tractor repairing can be performed more readily in a well-equipped shop. With the present extensive use of machinery, farm workshops should be arranged and equipped to systematically overhaul, repair and possibly repaint many of the farm machines during the winter.

Not only will such machines last longer, but many days of lost time during the following summer can be avoided. If the shop is properly designed for orderliness, good light, comfort and convenience, the work is certain to be easier.

"I am the grass... let me work"



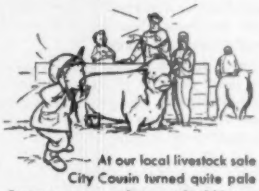
Let me work the miracle of changing soil, water, sunlight and air into a living, growing plant. Let my roots reach into the good earth to gather minerals and nutrients; store them in my leaves and stalks. Thus I become food for livestock, bone and flesh, hide and wool. I become meat and milk, man's finest protein foods that contribute greatly to the energy, initiative and wealth of America.

In the expansion of our livestock-grass economy lies a hope for an adequate meat diet for our growing population. Through meat animals, grass creates protein foods for human use . . . returns 80 per cent of its growth elements to the soil as manure. Grass protects our productive topsoil from wind and water erosion . . . holds moisture in the soil . . . helps restore and maintain organic matter. Grass works to keep America fertile.

Livestock producers are finding that it pays to pay attention to their grass. Today there are farmers and ranchers who are producing 400 to 600 pounds of beef per acre on grass alone. Hog and sheep raisers are finding that good alfalfa or rye pasture is worth $50 an acre, and more. Dairy farmers find their grass worth up to $169 an acre. County agents, experiment stations, conservationists and colleges can help you make more from your grass, no matter where you live.

Yes, I am the grass, let me grow in place of worthless weeds and brush . . . on land that never should be cropped. Put me back on land that never should have seen the plow. Let me work for you as your humble but mighty friend.

OUR CITY COUSIN



At our local livestock sale
City Cousin turned quite pale
Because, you see, he scratched his ear
And right then—he owned a steer!

Soda Bill Sez:

I'd rather make a living on my own hook, than hook the taxpayers for my living.

BIG does not mean BAD

It takes a big ship to carry a big cargo. It takes a big locomotive to pull a heavy train. It takes a big industry like yours and mine to do the big job of feeding America and a lot of the rest of the world. It takes big companies as well as little ones to keep that industry operating efficiently.

I firmly believe that the nation needs nation-wide meat packers, such as Swift & Company. The continuous research and education, and the complete utilization of by-products, which our size makes possible, are valuable services to the nation and its people. We help to bring the advantage of a nation-wide demand to livestock producers. We help to provide consumers everywhere with the kinds of meat they want.

I am sure that American agriculture, of which we are a part, can meet the needs of our growing population which wants and should have improved diets.

But we shall meet these demands only if we continue to nurture and encourage enterprise, ambition, and success. Only if we have the faith and courage to work and fight to create our own success. Let us, then, be careful not to confuse the issues. Let us condemn and eradicate evil practices wherever we find them, whether in big industries or small. But let us, and all Americans, realize the danger before we attack enterprise and success—lest we destroy not only the industry and civilization we have created, but also the hope and the heritage of our world for generations to come. • • •

The above message is from the speech of our President, Mr. John Holmes, before the American National Live Stock Association at Miami. I have quoted it here because I believe that it will be interesting and encouraging to the millions of livestock producers who were not able to be at the convention.

F. M. Simpson

Agricultural Research Dept.

Swift & Company

UNION STOCK YARDS, CHICAGO 9, ILL.

Nutrition is our business—and yours

Martha Logan's Recipe for

HAM SCRAPPLE

(Yield: 6 servings)

2 cups ground smoked ham
1 cup corn meal
1 tablespoon sugar
½ teaspoon salt
2½ cups boiling water
½ cup milk
1½ tsps. prepared mustard
Shortening or ham drippings

Mix together corn meal, sugar, and salt. Add slowly to boiling water and milk. Cook slowly in heavy pan, stirring occasionally, about 20 minutes. Add ham and mustard and mix well. Pack into loaf pan. Chill. When cold and firm, slice in 1-inch slices. Fry slices in quick-mix type shortening or drippings until brown on each side.

POISONOUS SEED OATS

by E. F. Ferrin
University of Minn.
St. Paul, Minn.

E. F. Ferrin

Seed grains treated with a fungicide may be dangerous stock feed.

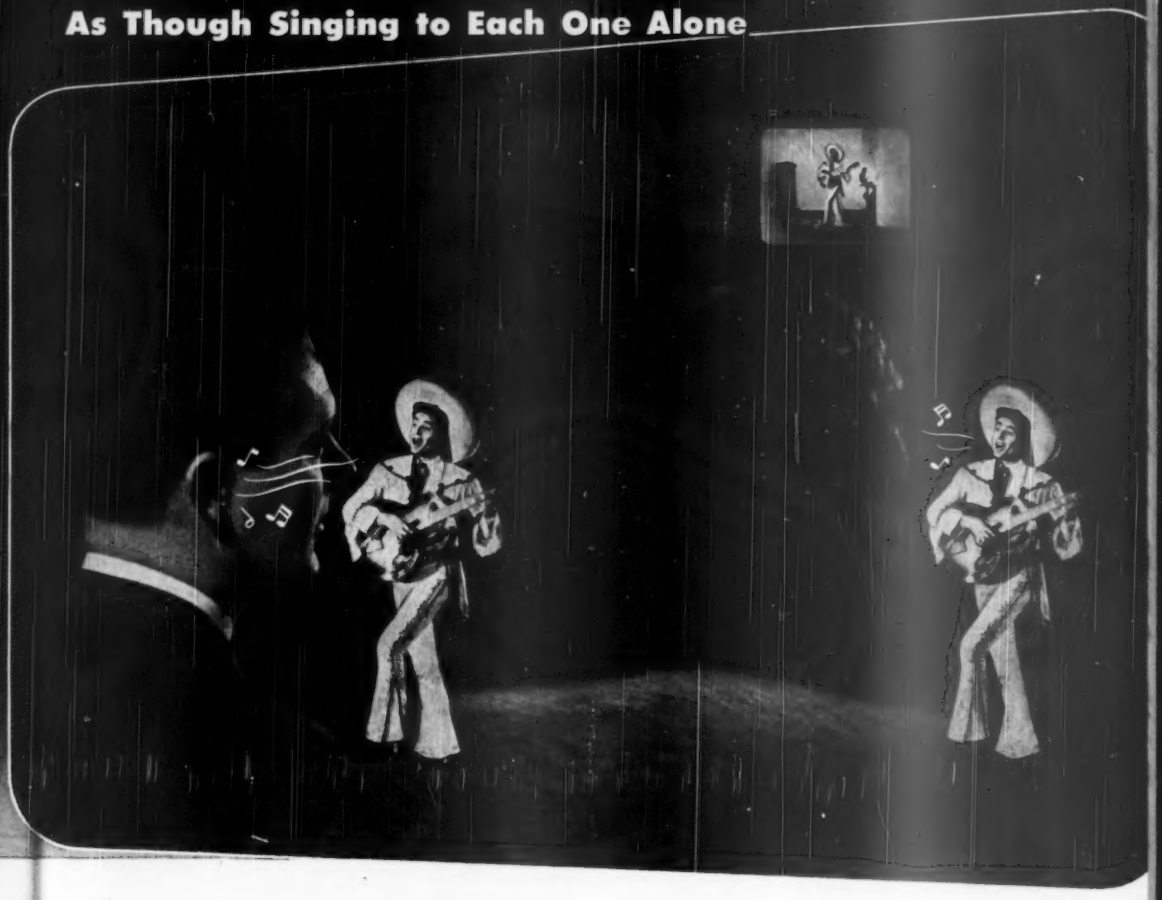
Oats treated with Ceresan M. were fed to growing pigs at the Minnesota Experiment Station. Pigs were fed only treated oats and water. The grain was not palatable and the amount of oats eaten for a week or 10 days was less than that of untreated oats consumed by similar pigs. After 10 days of feeding, the pigs ate little of the treated oats, lost weight and from 15 to 20 days after the start of feeding, became sick. The first symptom was a weak and unsteady gait followed by scouring and vomiting. Some of the pigs seemed to become dizzy and turned circles in the pens. They usually became blind and paralyzed before dying. All of the pigs fed treated oats died except two, which were kept on this feed only 10 days. Mercury poisoning deaths occurred 25 to 31 days after starting to feed the treated oats.

To see if it is worth while to try to salvage treated seed oats, they were mixed with good feeds at the rate of 15% in one case and 30% in another. The pigs did not show symptoms of poisoning. But they gained weight so slowly, and required so much feed, that it was an expensive method of feeding.

RECOMMENDATION NO. 1: *Never force pigs to eat such grain. Better burn it.*

RECOMMENDATION NO. 2: *Always inform a prospective buyer of seed grain if it has been treated with a fungicide.*

As Though Singing to Each One Alone



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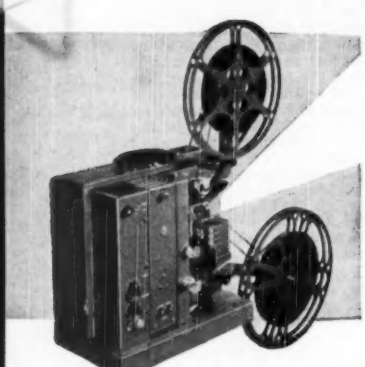

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Voices are crisp and lifelike. Musical notes are crystal clear. Sound effects are identical with the original.

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SCREEN TABLE FOR 16mm MOTION PICTURES

LENS FOCAL LENGTH	SCREEN SIZES								
	30" x40"	37" x50"	45" x60"	52" x70"	63" x84"	6' x8'	7' x9'	8' x10'	9' x12'
	Approximate Distance — Projector to Screen								
1"	9'	11'	13'	16'	19'	21'	24'	27'	32'
1½"	13'	17'	20'	23'	28'	32'	36'	40'	48'
2"	**18'**	**22'**	**27'**	**31'**	**37'**	**43'**	**48'**	**53'**	**64'**
2½"	22'	28'	35'	39'	47'	54'	61'	67'	81'
3"	27'	33'	40'	47'	56'	64'	72'	80'	96'

SCREEN TABLE FOR 2"x2" 35mm SLIDES (Double Frame)

LENS FOCAL LENGTH	SCREEN SIZES								
	40" x40"	50" x50"	60" x60"	70" x70"	84" x84"	8' x8'	9' x9'	10' x10'	12' x12'
	Approximate Distance — Projector to Screen Horizontal or Vertical Projection								
3"	7'	9'	11'	13'	16'	18'	20'	22'	27'
4"	10'	13'	15'	18'	21'	24'	27'	30'	36'
5"	**13'**	**16'**	**19'**	**22'**	**26'**	**30'**	**34'**	**38'**	**45'**
6"	15'	18'	22'	25'	30'	35'	39'	44'	52'
7"	17'	21'	26'	30'	36'	41'	46'	51'	61'

SCREEN TABLE FOR 35mm FILMSTRIPS (Single Frame)

LENS FOCAL LENGTH	SCREEN SIZES								
	30" x40"	37" x50"	45" x60"	52" x70"	63" x84"	6' x8'	7' x9'	8' x10'	9' x12'
	Approximate Distance — Projector to Screen Horizontal Projection								
3"	11'	14'	17'	19'	23'	27'	30'	33'	40'
4"	15'	19'	22'	26'	31'	36'	40'	44'	53'
5"	**19'**	**23'**	**28'**	**32'**	**39'**	**44'**	**50'**	**56'**	**67'**
6"	22'	28'	33'	39'	47'	53'	60'	67'	80'
7"	26'	32'	39'	49'	55'	62'	70'	78'	93'

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B

Diseases of Farm Animals

(*Continued from page* 34)

steadily since 1926. Much is known concerning the essential nature and deficiency symptoms of these vitamins in the diet of laboratory animals and poultry.

Recent studies have also shown that most of these factors are essential for normal growth and health of swine, and that a deficiency of these factors produces typical symptoms. A definite dietary requirement for the individual B vitamins has not been established for cattle, sheep and goats, however.

Studies on the vitamin B complex requirement and effects of this deficiency in swine have been carried out largely with purified or restricted diets. A need for thiamin, riboflavin, niacin, pantothenic acid, pyridoxine, choline and several other factors has been established.

Thiamin Deficiency Occurs in Hogs

Thiamin deficiency can be produced in young pigs by feeding rations deficient in this vitamin. Symptoms appear after the pigs have been on the diet for several weeks. The animals first refuse food, may vomit occasionally, and finally become emaciated. There is also a marked lowering of body temperature and pulse rate.

Death usually occurs within a few weeks unless thiamin is given. On autopsy, a flabby heart and liver damage are often found. Some individuals have excessive fluid in body cavities and pathologic changes in the gastrointestinal tract. Changes have been reported on the heart and liver. Studies reveal a lowered heart rate.

Thiamin is also needed by sows for successful reproduction. Results of recent studies at Washington State College with sows on thiamin-deficient diets may be summarized as follows: Gilts farrowed nine to 11 days prematurely, high mortality in newborn pigs, weak leg condition in pigs at birth, and unthrifty pigs and low weaning weights.

It is fortunate that practical swine rations are usually well fortified with thiamin when they contain a large proportion of whole grains and grain by-products.

Riboflavin deficiency has been produced experimentally in swine by feeding rations low in this factor. The following symptoms have been noted: slow growth, frequent scours, walking with difficulty owing to a crippled condition of the legs, and rough skin and coat.

Failure in reproduction was also noted by the Washington State College workers. They report that riboflavin-deficient gilts farrowed four to 16 days prematurely; a loss of appetite with poor gains during gestation; pigs died at birth or failed to survive more than 48 hours; and abnormalities such as enlarged front legs, generalized swelling, and hairlessness were evident in baby pigs.

Riboflavin may be supplied to swine in milk by-products such as skim milk, buttermilk and whey. Green pasture and well-cured alfalfa are also good sources. Grains are relatively low in this factor, but liver meal, yeast, and dried distillery solubles are rich sources.

Swine Require Niacin

Swine require niacin, but recent findings indicate that they can apparently get along without this vitamin if the ration contains adequate amounts of the amino acid, tryptophane. Niacin deficiency is characterized by poor appetite, slow growth, frequent diarrhea, necrotic lesions in the large intestine, and a high mortality if the deficiency continues.

Barley usually contains more niacin than corn. Fresh liver, liver meal and yeast are good natural sources of the factor. Successful use of pure niacin in the treatment of necrotic enteritis in swine has been reported by Michigan and Pennsylvania workers and by several practicing veterinarians, but the problem is still controversial. More work needs to be done in this field in order to define more clearly the interrelationship between diet and susceptibility of swine to organisms causing necrotic enteritis.

Pantothenic Acid Destroyed by Heat

As early as 1916, Wehrbein of Iowa described a posterior paralysis and incoordination in swine. Work in recent years by the U. S. Bureau of Animal Industry demonstrated that the incidence and severity of the disease could be increased by heating the ordinary swine ration to 115 to 120 degrees F. for 30 to 40 hours.

Later work showed that pantothenic acid was the preventative factor that was destroyed by heat treatment. Studies with purified diets demonstrated this relationship further and revealed that another B vitamin, known as pyridoxine, was also involved. Symptoms of panto-

(*Continued on page* 88)

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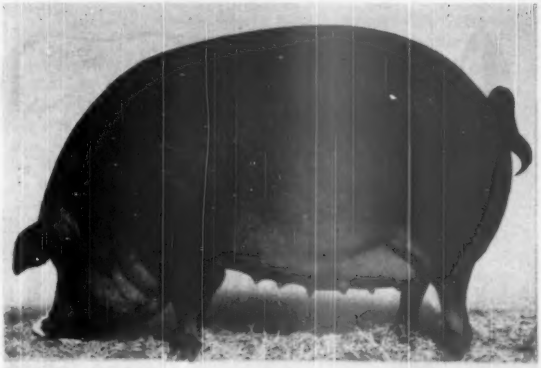
Duroc Judging Pictorial

Sows



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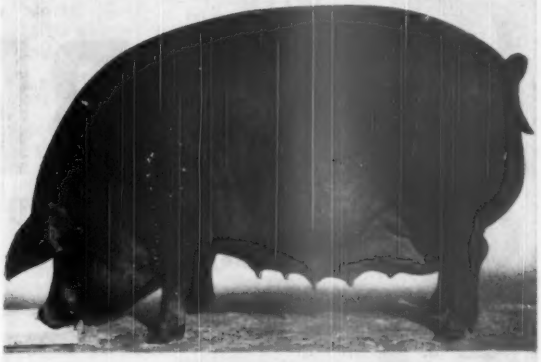

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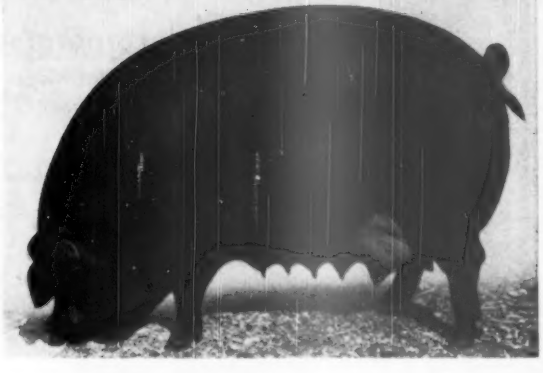

← 4 →

See page 68 for correct placings

Booklet on Choline Chloride

A new booklet, which describes the use of choline chloride as an ingredient in livestock and poultry feeds, has just been issued by the Agricultural Division of Commercial Solvents Corp., 17 East 42nd Street, New York 17, N. Y.

Included in the booklet is a summary of the latest information available on the value of choline as a feed ingredient, as well as sections describing methods of pre-mixing and handling, and recommended nutrient allowances.

Another Look at Mastitis

(*Continued from page* 41)

need to be used with care. Their use does not lessen the need for good management practices, especially infection control; otherwise, numerous reinfections make the use of these drugs too costly.

Many acute cases require careful nursing and individual treatment. The latter needs to be adjusted to the symptoms and the probable infection causing the trouble. Udder infusions are often useful, but may be insufficient or even detrimental. Resort to injection into the vein of sulfonamide and other drugs is sometimes imperative in order to rescue severely afflicted animals. Even this may not save the animal.

Contrary to the ideas of some, the biggest things in the protection of udder health are not "wonder drugs" but are still the extent of the desire and willingness of those working with the herds to carry out preventive measures.

★

Need Better Soil Knowledge

Soil surveys must carry a heavier load in developing better rural land use and rural living if the people of the world are to gain an effective cultural balance with their resources, states Dr. Charles E. Kellogg, head, USDA Division of Soil Survey.

The people of the world cannot be well fed if farmers are confined to the soils of their grandfathers and use only their tools. Yet the world could feed itself abundantly.

The means for producing the needed food supplies is development of efficient communities that are a mixture of agriculture and industry, with water, soils, forests and minerals used together. Basic knowledge about the soils in a region is needed before the world can proceed effectively along these lines.

★

Onlooker: "Why does that cow seem so happy while being milked?"

Farmer: "She's a baseball fan and likes the Yanks."

More and More Hog Raisers Are Switching to DUROCS

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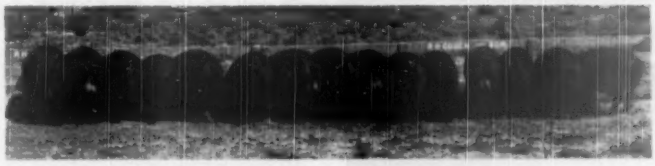

This litter of Purebred Durocs raised with the other litters on the farm of R. H. Couch & Son, Shawnee, Okla., weighed 3,715 lbs. at 180 days.

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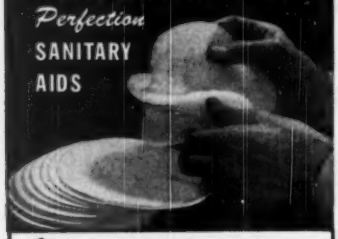

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New Fruit Varieties

(*Continued from page* 23)

mention but some representative varieties are Starking, Red Delicious, Blaxstayman and Jonared.

The Cortland, Lodi and Melba, among others, have been excellent introductions resulting from breeding work. Some interest has developed in varieties with special climatic adaptability, such as Valmore and Beverly Hills.

PEARS: In the main production areas of the west coast there has been relatively little interest in new pear varieties. The Max Red Bartlett is the only pear to capture the grower's imagination in recent years, and it is being tested with caution.

Through the mid-west and east, there is a continuing interest in the development of a high quality, blight-resistant pear to compete with the west coast varieties. Some of the introductions for these areas are Waite, Gorham and Richard Peters.

PEACHES: Since peaches are grown more widely than any other stone fruit, interest in new varieties for commercial use is everywhere tremendous. Each region has its favorites. Only a few will equal Elberta's almost universal acceptance as a standard variety. For this reason, the abridged list of varieties being tested in California under commercial and experimental conditions is merely typical of numerous other such lists that might be compiled.

July Elberta and Rio Oso Gem are excellent examples of the rapidity with which superior varieties may rise to leading positions in the fruit industry. In fact, they have become so firmly established as commercial varieties that many may consider them as old, standard sorts.

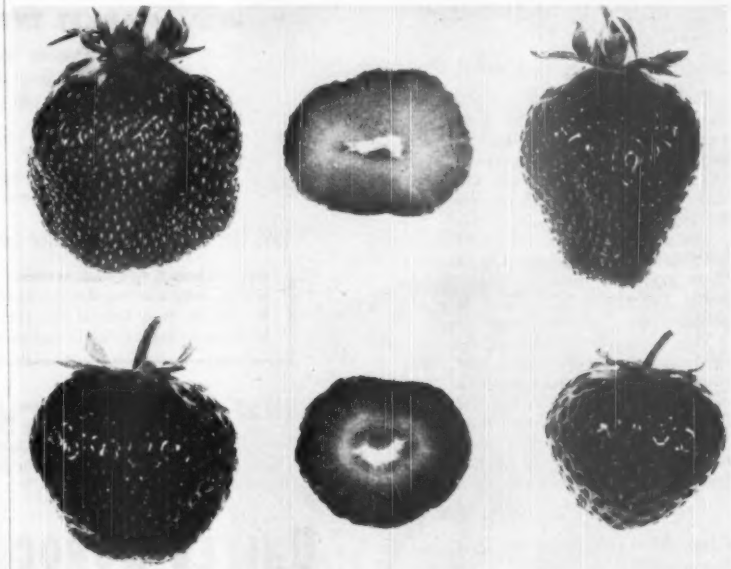
Use Fruit Breeding Techniques

Fruit breeding techniques have been applied to the special problems of peach varieties. For example, the canning clingstone peaches of California are the basis of the largest peach industry in the state. The call for better varieties has been met by the long list shown in the table. Some of these new ones—notably the Fortuna—have already become leading varieties.

A recent demand has been for varieties with low chilling requirements, adapted to the warm-winter sections of the country. Most of the examples listed have been developed for southern California, but the work in Georgia has produced equally striking results—as examples, the Dixigem, Dixigold, Dixired and Southland. The Georgia peaches have been developed for the eastern seaboard markets, while the southern California peaches are designed for the home orchard and the Los Angeles markets.

NECTARINES: Commercial nectarine production is largely limited to California and is being revolutionized by the introduction of the varieties listed in the table. With many more promising kinds just around the corner, there is no doubt that the recommended list of 10 years ago will soon be hidden between the pages of outdated catalogs and pomology texts. That increasing interest in this fruit is

(*Continued on page* 88)



Two new strawberry varieties, Campbell (above), and Cupertino. (From California Agricultural Experiment Station Bulletin 714.)

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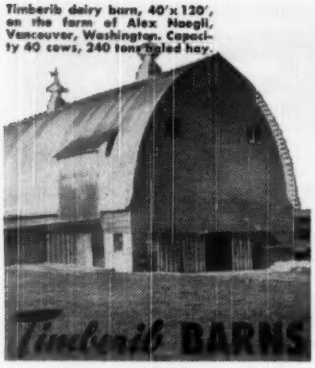

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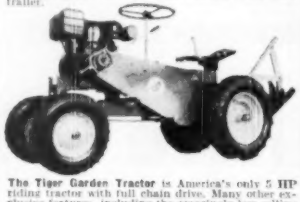

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★

Hunger Signs in Crops

(*Continued from page* 16)

nitrogen deficiency also may be seen.

Lack of potash shows up first in slowing of the growth rate in seedlings or young plants, many of which are spindly, with leaves turning yellowish green to yellow and showing marginal scorch. Usually the yellowing is streaked, this being more marked in older plants. Brown-edge scorching of the leaves is the most outstanding sign, contrasting with midrib browning as in nitrogen deficiency. Browning usually progresses from the bottom of the plant up. Usually the plants are weak and lodge easily.

Signs of magnesium deficiency also are distinctive, appearing in broadleafed crops such as cotton as bronzing, or other discoloration of the outer leaf parts, but with midrib remaining green. The leaves of corn tend to show streaky blotches. Oldest leaves show the signs first, with yellowish coloring appearing between the parallel veins. The streaks extend the entire length of the leaves.

Boron Deficient in Many Soils

Boron also is deficient in many soils, and shows up especially in alfalfa, although symptoms have been observed on a number of the legumes. It appears in alfalfa as yellowing of the leaves near the growing point, sometimes with reddening, and with lower leaves remaining green. The plants become stunted by shortening of the internodes, resulting in resetting, with flowers failing to form and buds appearing white or light brown and dead.

The symptoms often appear most abundantly after drought. The relatively high applications of lime used on alfalfa also often intensify the symptoms because the nutritional balance is upset. Alfalfa fertilizers used in the eastern states now frequently contain enough borax to supply the 13 to 20 pounds per acre with normal fertilization rates needed to correct boron deficiency.

Other nutritional deficiencies have similar indicators. In corn, for example, lack of calcium causes gelatinizing of the young unfolding leaves with tip ends sticking together. Lack of zinc shows as "white bud" or chlorosis of the youngest leaves.

Symptoms Have General Pattern

Deficiency symptoms tend to take a general pattern but may vary from crop to crop. Different symptoms of the various deficiencies may appear in different plants, or in different organs of the plants. Foliage symptoms may show in color, density, size and shape of the leaves. The thickness, color and length of the internodes of stems or stalks may be affected.

Roots may show differences from normal in color, amount of fiber, size or thickening. The amount of bloom and time of opening may be affected. Fruit characters, such as size, color, hardness and flavor may vary from the normal.

Corn and cotton are good indicator plants used in many rotations. Where steps are taken to correct deficiencies that show up in these crops by applying the needed nutrient, either separately or in combination with other fertilizers, they will tend to fortify the other crops in the rotation against deficiencies that may show up in different ways.

"Ag" Leaders Can Help

With increasing crop yields and as passing years cause depletion of some of the nutrients naturally available in virgin soils, county agents, vocational agriculture teachers, soil conservationists and other agricultural leaders may be called on increasingly to identify or diagnose symptoms and causes of nutritional deficiencies in crops.

Together with farmers themselves, those who keep up with research and make careful observations in different fields are in the best position to observe and study symptoms as they appear. In some cases, tissue analyses may be desirable to determine whether or not the soil is furnishing adequate nutrients for the plants.

★

USDA Predicts Better Fruits

Larger and better flavored fruits are becoming available to American consumers as a result of new knowledge of "polyploidy" now being used by plant breeders.

Polyploidy is used by the plant scientists to describe plants that have three or more basic sets of chromosomes in the somatic cells. Many of our present cultivated plants are diploids; that is, they have only two sets of chromosomes. Within a few years most people will use the term "Polyploidy" as glibly as they now use "hybrid vigor."

In Every Thimbleful

a uniform, even blend of growth elements

Growth-making elements in Swift's New Process Red Steer feed each plant in the same proportion, because it's an exceptionally uniform plant food. A thimbleful from the top of the bag is the same as a thimbleful from the bottom. So all the plants in your field are fed evenly; each row or hill gets the correct balance of needed plant food.

You can think of New Process Red Steer not as an expense but as a profitable investment. This *modern*, better plant food actually *lowers your cost of production per bushel*. It helps you to grow *more* from every acre you plant and to earn *more* money from the crops you grow.

An *exclusive* manufacturing method has been developed by Swift to make New Process Red Steer. First, complete mechanical mixing—then, *complete chemical processing*.

This new process makes Red Steer more uniform in four important ways: 1) uniform blending, mixing, curing; 2) uniform freedom from caking, lumping, bridging; 3) uniform distribution through your machines; 4) uniform feeding of your crop.

Use New Process Red Steer Plant Food for better crops and bigger yields. It's wonderful for pasture and hay. It's wonderful no matter what crop you grow or where you grow it. Order *all* you need of this growth-promoting plant food *early*. See your Authorized Swift Agent today!

New Process RED STEER means bigger and better crops

It feeds your crops better. Careful blending and curing allows this modern plant food to feed growth elements to the growing crop as needed. Your crop is given a quick boost at the start, then gets progressive feeding all the way to harvest.

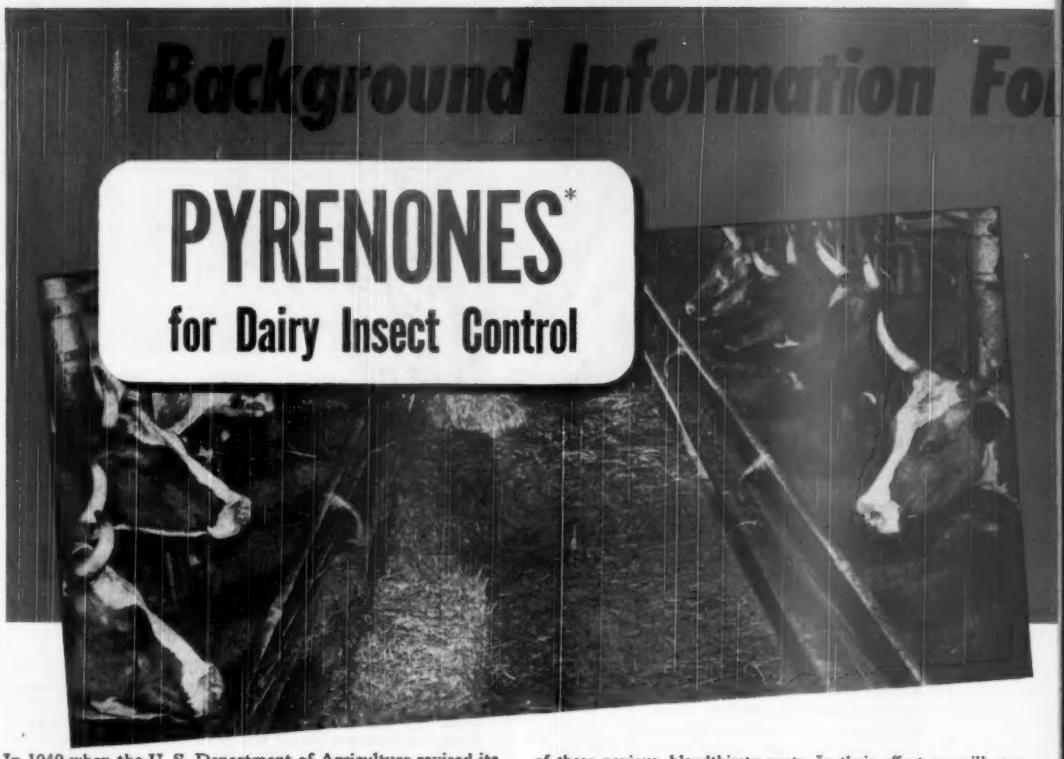
It works better in your machines. Growth elements in New Process Red Steer do not segregate in the drill. This modern plant food flows evenly without lumping, caking or bridging. And it can be stored safely in dry places, because it's packed in tough, sturdy bags.

It lowers production costs. Red Steer feeds your crop the correct balance of growth elements. For this reason you get bigger, high-grading yields at less cost per bushel. Crops that cost less to grow earn more money.

Swift's New Process RED STEER Plant Food

Buy Swift's Plant Foods at the sign of the RED STEER

Ask about *Blenn* & Brimm Swift's Specialized Crop Makers



In 1949 when the U. S. Department of Agriculture revised its recommendations for insect control on dairy cattle, only two types of insecticidal material were found acceptable from the standpoints of effectiveness and freedom from toxicological hazards. One of these was the combination of pyrethrins with the new chemical, piperonyl butoxide. As sole manufacturers of this material, U. S. Industrial Chemicals, Inc., believes that Extension Workers, County Agents, Vo-Ag Teachers and others concerned with helping the dairy farmer will welcome this quick summary of facts.

NAME— Combinations of pyrethrins and piperonyl butoxide are sold only under the U.S.I. trade name PYRENONE, and only to recognized manufacturers of finished insecticides.

LABEL— Most of these manufacturers use the "Pyrenone" name on their labels, some do not. Dairy farmers *should always look at the ingredient statement on the label.* If the statement shows "pyrethrins" and "piperonyl butoxide" the product is a Pyrenone-based insecticide.

WHY THE COMBINATION? Pyrethrum has long been one of our safest and most effective insecticides. Piperonyl butoxide is a new chemical, an effective insecticide itself, which has the peculiar ability to work in combination with minute amounts of pyrethrins to produce a total effectiveness many times that of either component.

SAFETY— Pyrenone-based insecticides leave no toxic residues harmful to humans or warm-blooded animals. Used as directed they are entirely safe for use on cows, in milk rooms and in other parts of dairy, farm, or ranch buildings. They won't contaminate milk, meat or other animal products.

EFFECTIVENESS — Pyrenone-based insecticides are equal or superior to other acceptable insecticides in the control of horn flies, stable, deer and house flies, gnats and mosquitoes. In the case of HORSE FLIES, (tabanids) Pyrenones are unique. They are the only acceptable insecticide that provides any measurable control of these noxious, bloodthirsty pests. In their effect on milk production during midsummer, horse flies can be a menace of the first order; as carriers of anthrax, anaplasmosis, and, possibly, other diseases they can be even more serious.

CONVENIENCE — Pyrenone-based insecticides are often preferred by dairy farmers because they can be obtained in oil-spray or emulsion forms. Pyrenones are also available, however, in wettable powders.

The availability of Pyrenones and their effectiveness and safety as area-type sprays, plus their suitability for direct application to the animal is another convenience factor. This has been an important reason for the trend away from barn spraying. While Pyrenones are the practical equal of any suitable residual-type spray in effectiveness and lasting power, more and more dairy farmers are getting away from large-scale, labor-consuming barn spraying. They do find it practical to use Pyrenone-type insecticides for treating milk rooms, passageways and other readily accessible surfaces.

Pyrenone-based insecticides have an added advantage: they're suitable not just for dairy insect control, but also for general use around the farm for protecting horses, sheep, goats, hogs, poultry, dogs, and cats.

**Pyrenone is a registered trade-mark of U. S. I. It designates combinations of pyrethrins and piperonyl butoxide.*

U.S.I. INDUSTRIAL

When writing advertisers please mention *Better Farming Methods*

Agricultural Leaders On...

CPR for Truck Crop Insect Control

Truck farmers have a new, powerful ally that was thoroughly field-proved during the 1949 season. It's an insecticide combination known as *CPR*—the first truly multi-purpose formulation for use on truck crops. CPR-based insecticides were introduced commercially last year, after five years of extensive field tests in 15 states. These tests and subsequent practical use showed conclusively that CPR-based insecticides are safe . . . economical . . . convenient to use . . . and effective against an extremely wide variety of both chewing and sucking insects that damage truck crops.

The trade-name CPR designates combinations of pyrethrins and rotenone—both long recognized as safe, effective insecticides—and a relatively new chemical, piperonyl cyclonene. Piperonyl cyclonene is a highly effective insecticide in its own right. When combined with small amounts of pyrethrins and/or rotenone it produces an insecticidal effectiveness *many times* that of either component alone. For this reason CPR deserves recognition as a *completely new type of insecticide concentrate*—rather than a pyrethrum or rotenone type of product.

Wide-Range Effectiveness

Here is the wide variety of insects against which CPR-based insecticides are effective—

BEANS
- Mexican bean beetle
- Onion thrips
- Corn ear worm
- Bean leaf beetle

TOMATOES
- Flea beetle
- Colorado potato beetle
- Blister beetle
- Potato aphid

CURCUBITS
- Melon worm
- Pickle worm
- Squash vine borer

CRUCIFEROUS CROPS
- Imported cabbage worm
- Diamond back moth
- Cabbage loopers

PEAS
- Pea weevil
- Omnivorous leaf tier
- Pea aphid

CELERY
- Lygus campestris
- Celery leaf tier

ASPARAGUS
- Asparagus beetle

POTATOES
- Colorado potato beetle
- Blister beetle
- Flea beetle

BEETS
- Webworm

LETTUCE
- Corn ear worm

SPINACH
- Leaf tier

BLUEBERRIES
- Blueberry fruit fly

ORNAMENTAL PLANTS
- Box elder bug

Utmost in Safety

Truck farmers can use insecticides made with CPR *with complete assurance of safety* to both user and final consumer. They leave *no toxic residues* harmful to humans. Crops can be treated right up to time of harvest, and forage treated with CPR can safely be fed to livestock.

FIELD TESTS

In their first year on the market, CPR-based insecticides received a thorough on-the-job testing in almost every section of the country. Reports from 31 federal- or state-supported research institutions, and from 15 farm users gave evidence of their outstanding safety and effectiveness . . . their suitability for all-around, all-season truck crop insect control.

To date, reports of successful use of CPR have been received from:

NEW ENGLAND	SOUTH	Michigan	WEST
Maine	South Carolina	Nebraska	Oregon
Massachusetts	Georgia	Wisconsin	Utah
Connecticut	Tennessee	Indiana	Wyoming
MIDDLE ATLANTIC	Florida		Colorado
New York		SOUTHWEST	California
Pennsylvania	MIDWEST	Texas	Montana
New Jersey	Ohio	Arizona	Washington
Virginia	Iowa	Arkansas	

CHEMICALS, INC.

60 East 42nd Street, New York 17, N. Y.

IN CANADA: Standard Chemical Co., Ltd.
99 Vanderhoof Avenue, Leaside, Toronto 17, Ontario

Rules for Estimating Grain and Roughage

1—*To find the number of bushels of grain or shelled corn in a bin:* Multiply the length by the width by the depth (all in feet) and divide by 1¼ or multiply by .8.

2—*To find the number of bushels of ear corn in a crib:* Multiply the length by the width by the average depth (all in feet) and divide by 2½ or multiply by .4 If the crib is round, multiply the distance around the crib by the diameter by the depth of the corn (all in feet) and divide by 10.

3—*To find the number of tons of hay in a mow:* Multiply the length by the width by the height (all in feet)and divide by 400 to 525, depending on the kind of hay and on how long it has been in the mow.

4—*To find the number of tons of hay in a stack:* Multiply the overthrow (the distance from the ground on one side over the top of the stack to the ground on the other side) by the length by the width (all in feet); multiply by 3; divide by 10 and then divide by 400 to 525.

5—*Fodder and Stover* are usually estimated on the acre basis, estimating amount of corn in fodder and allowing some additional value per acre for the stover.

Livestock Breeding Chart

Animal	Best Age to Breed (Month)	Heat Period			Time to Breed after Delivery	Length of Gestation Period (Days)
		Duration	Repeats	Occurs after Delivery		
Mare	48	3-7 days	18-21 days	3-17 days	9th day	340
Cow	15-24	3-48 hours	18-21 days	28 days	8-12 weeks	283
Sow	8-10	1-3 days	18-21 days	3-9 days	8½ weeks	114
Ewe	18-20	1-3 days	13-19 days	6-7 mos.	Summer & Fall	150

Approximate Feed Required per Animal for One Year:

KIND OF LIVE STOCK	*Amounts needed without silage*				*Amounts needed with silage*				
	Corn	*Oats*	*Supplement*	*Hay*	*Corn*	*Oats*	*Supplement*	*Silage*	*Hay*
Beef breeding cattle	*bu.*	*bu.*	*lb.*	*T.*	*bu.*	*bu.*	*lb.*	*T.*	*T.*
Cow or bull	....	....	.....	2¼	....	....	.....	2	1
Heifer yearling	5	8	.....	1½	5	8	.....	2	¼
Calf to one year old	4	4	.....	1	4	4	.....	½	¾
Feeder cattle (in drylot)									
Steer calf (for 500 pounds gain)	55	....	225	¾	50	....	350	1¼	¼
Heifer calf (for 350 pounds gain)	40	....	150	½	35	....	200	¾	¼
Steer yearling (for 400 pounds gain)	50	....	100	¾	40	....	200	1½	¼
Heifer yearling (for 250 pounds gain)	30	....	75	½	25	....	150	¾	¼
Medium steer (for 250 pounds gain)	30	....	50	¾	15	....	150	2½	¼
Dairy cattle									
Cow, producing 6,000 pounds milk	25	28	200	2½	15	23	300	3	1¼
For every 1,000 *pounds more, add*	2	2	40	.....	2	2	75	.....	.....
Bull	12	12	150	2½	12	12	250	1½	1¼
Heifer yearling	9	9	100	2	8	8	160	1	1¼
Calf* to one year old	5	5	60	1	5	5	100	½	¾
Horses									
Over two years old	20	35	.....	2½					
Colt to two years old	10	18	.....	1¾					
Hogs									
Spring pigs, to 225 pounds (includes feed for breeding stock)	15	2	70	.....					
Fall pigs (includes feed for breeding stock)	16	3	90	.....					
Feeder pigs (per 100 pounds gain)	7	....	25	.....					
Sheep									
Over one year old (including feed for spring lambs)	2	3	20	*lb.* 600					
Feeder lamb in drylot	2	1	.....	150					
Feeder lambs on pasture	1	2	.....	50					
Poultry				*Wheat bu.*					
100 laying hens	55	72	1,350	38					
100 chicks to 14 weeks	12	4	240	3					
100 pullets from 14 weeks to 24	16	6	288	4					

GRAIN SUBSTITUTIONS

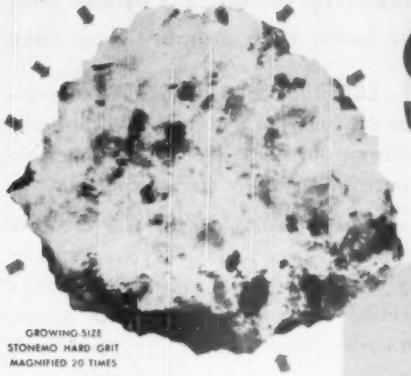
Two bushels of oats or 1¼ bushels of barley equal 1 bushel of corn in feeding value. Coarsely ground wheat equals corn pound for pound for swine and beef cattle but does not quite equal corn in sheep and dairy-cow rations.

*Ration should also include 200 lb. whole milk and 1,200 lb. skimmilk. (*Courtesy University of Illinois*)

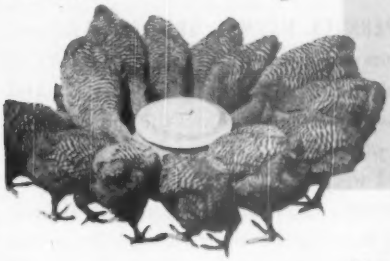
Broilers prove the value of

STONEMO

Granite Grit



GROWING-SIZE STONEMO HARD GRIT MAGNIFIED 20 TIMES



Extra Grinding Surfaces of this Hard Insoluble Grit help Broilers better use their feed for faster gains ...at less cost!

If you would like to see the value of using STONEMO Granite Grit as a grinding agent arrange this test with any broiler grower.

Divide a flock of birds in half. Feed both the same rations, but give one half access to STONEMO Granite Grit, using five bags to the 1000 birds.

During the growing period from chick to market size the cost of STONEMO would be about three-fifths of a cent per bird. You may, however, increase your feed efficiency (faster gains per pound of feed) with a saving of feed up to 20%.

That's why we say growing birds need STONEMO Granite Grit. Learn all the facts. Write for our special Vo-Ag County Agent Kit.

FREE VO-AG COUNTY AGENT KIT

Includes samples of STONEMO and special "Question and Answer" Bulletin which gives you many helpful facts about grit. Address Dept. BFM-3.

MAKE THIS TEST!

There is often confusion in the minds of farmers about soluble vs. insoluble grit. Make this test. Drop some of the "grinding agent" your farmers are using in a glass of vinegar. If it fizzes or bubbles, that means it's soluble – will dissolve – change the mineral balance of rations – and should not be used as a grinding agent! Now – try STONEMO! See the difference!

STONE MOUNTAIN GRIT CO.

Lithonia, Ga. Barre, Vt.

COUNT ON DITHANE FOR . . .

BETTER CROP PROTECTION

DITHANE crop protection *is* better—three ways better than ordinary fungicides.

1 **CONTROLS MANY DISEASES** of vegetables, ornamentals and fruit. This not only simplifies your spraying and dusting programs; it means *better* disease control.

For example . . . in place of two or three fungicides on your tomatoes, your DITHANE spray or dust schedule gives you effective protection against early and late blight, anthracnose, septoria and gray leaf spot.

2 **PERMITS NORMAL GROWTH** of foliage, blossoms and fruit. That's because DITHANE is mild in its effect on plant tissue. And because DITHANE eliminates the vine stunting action of copper fungicides, crops dusted or sprayed with DITHANE usually grow larger, live longer and produce bigger fruit of finer quality than similar vegetables receiving the older type fungicides.

3 **THOROUGHLY PROVED** by thousands of farmers on thousands of acres of potatoes, tomatoes, celery, cantaloupe and other crops.

FREE . . . Write for these useful folders to help you grow finer quality crops:

No. AG-1 *How to Prevent Tobacco Blue Mold*
No. AG-2 *Insect Control On Fruit and Vegetables*
No. AG-3 *How to Boost Potato Yields*
No. AG-4 *Disease Control on Vegetables, Fruit, and Ornamentals*

IT PAYS TO USE

DITHANE

THE TIME-PROVED ORGANIC FUNGICIDE

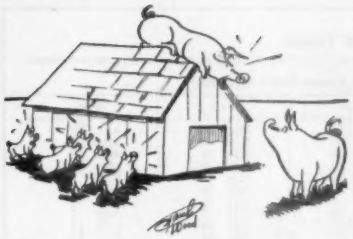
CHEMICALS FOR INDUSTRY

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Representatives in principal foreign countries

DITHANE *is a trade-mark, Reg. U. S. Pat. Off. and in principal foreign countries.*



"Maybe you can convince them that I ain't their mom!"

★

Livestock and Poultry Feeds

(*Continued from page* 17)

feed ingredients are beginning to appear. Fish solubles have two or three times the potency of fish meal and fish meal two or three times the potency of meat meal. Liver is an excellent but usually unavailable feeding source of the vitamin.

Conduct Rumen Digestion Research

Utilization of fiber by sheep and cattle is much greater than that by swine and poultry because bacteria in the rumen digest a great deal of fiber under favorable circumstances. It will be possible, apparently, to utilize considerable quantities of low quality hay, straw and corn cobs with a profitable energy yield when the many active research projects on rumen digestion in this and other countries are completed. Balanced amounts of easily digested carbohydrates and proteins are essential for maximum digestion of the cellulose, a major constituent of roughages.

Cobalt, which is a constituent of vitamin B_{12}, is known to be necessary to support an adequate rumen flora but it has not been demonstrated that B_{12}, as such, may be used by the rumen bacteria as a source of cobalt.

★

New Poultry Breeding Methods

(*Continued from page* 20)

ticipant in the formation of the 4-way hybrid chick is carefully chosen for one particular spot on this professional poultry breeding plan. They play together as a team and, although one or two might fit into a similar position on another team, they are usually most effective in their own particular little "nick".

The training period consists of intense inbreeding (brother x sister) for a period of about four years. During this training period many individual inbred lines "give up the ghost". The remaining inbred lines are tested in various positions for two or three years to find out whether they will make the team and where is their best position. From that time on, as long as the inbred line does not get out of condition, their place on their specific team

(*Continued on page* 62)

The Pillsbury 4X FEED CLUB

By JOHN D. MARTIN

Current Pillsbury feed advertising stresses life-cycle feeding, which is getting more and more attention from nutritionists and good feeders.

It is not a new idea, of course. A greater part of our educational job always has been tied up with this subject. The feeder who does the best job of it is the one who prospers most.

There has been much progress, on the whole, but there are still weak links in the chain of general farm practice.

Pity the Poor Pullet!

One of the most persistent problems in this respect is the feeding of young birds on the range. By and large, baby chicks are well fed and cared for.

But a great many of them are slowed down to a walk throughout the vitally important summer growing season. As you know, young birds need enough good feed during this period to build size and strength and stamina for long and heavy production.

Equally important is that well-fed birds lay early, when prices are best.

Any ideas you have that will influence flock owners to "do right by their pullets" will be much appreciated.

Pillsbury Helps the Life-Cycle Feeder

Various phases of life-cycle feeding have different nutrition requirements. Where production and finishing rations do not meet these requirements, Pillsbury makes special feeds for the purpose.

Among these specials are:

Dry and freshening feed for dairy cattle; breeder mash for hatching egg production; pig and sow feed; calf starter and calf ration; starting and growing feeds for chickens and turkeys.

Tips from Feeders

"When giving medicine to livestock by the 'drenching' method, we use an old milking machine teat tube over the mouth of a pop bottle. This method is safer and much more satisfactory."

Mrs. Donald L. Carey,
R. R. 2, Hamilton, Indiana

"I wax the top of my electric brooder canopy every time I start a batch of new chicks. Chicks cannot roost on it, as they slide off when they try."

Mrs. Philip E. Lauer
West Union, Iowa

Early Chicks Thriving

We are getting enthusiastic reports from Pillsbury feeders who bought chicks early. They have had an opportunity to see results from the new Pillsbury Chick Starter, and apparently the new 4X formula is making a big hit.

It was no easy matter to improve on the Pillsbury's Best Chick Starter of past seasons, but most certainly it has been done.

APF concentrate was added, the mineral content improved, and other adjustments and improvements made. The sum total spells better results in the brooder house.

THOUGHT OF THE MONTH

He that will not supply new remedies must expect new evils. — *Bacon*

WE OFFER $25

for every letter used in this column. Send us any practical ideas you have discovered on management, feeding and breeding practices.

Pillsbury's BEST XXXX FEEDS

Pillsbury Mills, Inc.
Feed and Soy Division
Clinton, Iowa

Mills—Clinton, Centerville, Minneapolis, Los Angeles, Atchison, Lima, Ogden, San Francisco, Colton, Sacramento

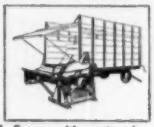
You are cordially invited to visit any of them

GEHL *the most wanted*

Forage Harvesters

The Gehl has *more years of proved performance* back of it than most forage harvesters. Thousands of users agree that the Gehl leads in better cutting, all-'round performance and *value per dollar*. Built to stand up year after year. Like the long-famous Gehl feed cutters and silo fillers, the Gehl Forage Harvester *cuts uniformly clean and fast* . . . no shredding. Does an equally fine job in windrowed hay, corn or other row crops. Sickle bar attachment also available. *Saves many man-hours and back-breaking work!*

GEHL EQUIPMENT DOES THE COMPLETE FORAGE JOB FROM FIELD TO STORAGE



Gehl Blower elevates fodder to highest silo or mow. Power take-off from blower, or separate electric drive operates Gehl Self-Unloading Wagon and others. FREE PLANS for making self-unloading wagon, using Gehl parts kit.

Gehl Forage Harvester is built with power take-off from tractor as illustrated, or with own motor.

GEHL BROS. MFG. CO.
Dept. MC-562
West Bend, Wis.

There's Nothing Better Than a GEHL!

Know Your Soil
Test it with LaMotte Soil Testing Equipment

Reliable—Accurate—Easy to Operate

The result of 28 years of extensive co-operative research with agronomists and expert soil technologists.

Tests for the following available in single units or in combination sets:

Ammonia Nitrogen
Nitrate Nitrogen
Nitrite Nitrogen
Available Potash
Available Phophorus
Chlorides
Sulfates
Iron
pH (acidity and alkalinity)
Manganese
Magnesium
Aluminum
Replaceable Calcium

Tests for Organic Matter in Soils and Nutrient Solutions (hydroculture) furnished only as separate units.

Information sent on request

LaMotte Chemical Products Co.
Dept. BFM — Towson, Baltimore 4, Md.

"Make the Best Better"

Gestation Table

Date of Service	Date Animal Due to Give Birth			
	Mare	Cow	Ewe	Sow
Jan. 1	Dec. 6	Oct. 10	May 30	Apr. 23
Jan. 11	Dec. 16	Oct. 20	June 9	May 3
Jan. 21	Dec. 26	Oct. 30	June 19	May 13
Jan. 31	Jan. 5	Nov. 9	June 29	May 23
Feb. 10	Jan. 15	Nov. 19	July 9	June 1
Feb. 20	Jan. 25	Nov. 29	July 19	June 11
Mar. 2	Feb. 4	Dec. 9	July 29	June 21
Mar. 12	Feb. 14	Dec. 19	Aug. 8	July 1
Mar. 22	Feb. 24	Dec. 29	Aug. 18	July 11
Apr. 1	Mar. 6	Jan. 8	Aug. 28	July 21
Apr. 11	Mar. 16	Jan. 18	Sept. 7	July 31
Apr. 21	Mar. 26	Jan. 28	Sept. 17	Aug. 10
May 1	Apr. 5	Feb. 7	Sept. 27	Aug. 20
May 11	Apr. 15	Feb. 17	Oct. 7	Aug. 30
May 21	Apr. 25	Feb. 27	Oct. 17	Sept. 9
May 31	May 5	Mar. 9	Oct. 27	Sept. 19
June 10	May 15	Mar. 19	Nov. 6	Sept. 30
June 20	May 25	Mar. 29	Nov. 16	Oct. 9
June 30	June 4	Apr. 8	Nov. 26	Oct. 19
July 10	June 14	Apr. 18	Dec. 6	Oct. 29
July 20	June 24	Apr. 28	Dec. 16	Nov. 8
July 30	July 4	May 8	Dec. 26	Nov. 18
Aug. 9	July 14	May 18	Jan. 5	Nov. 28
Aug. 19	July 24	May 28	Jan. 15	Dec. 8
Aug. 29	Aug. 3	June 7	Jan. 25	Dec. 18
Sept. 8	Aug. 13	June 17	Feb. 4	Dec. 28
Sept. 18	Aug. 23	June 27	Feb. 14	Jan. 7
Sept. 28	Sept. 2	July 7	Feb. 24	Jan. 17
Oct. 8	Sept. 12	July 17	Mar. 6	Jan. 27
Oct. 18	Sept. 22	July 27	Mar. 16	Feb. 6
Oct. 28	Oct. 2	Aug. 6	Mar. 26	Feb. 16
Nov. 7	Oct. 12	Aug. 16	Apr. 5	Feb. 26
Nov. 17	Oct. 22	Aug. 26	Apr. 15	Mar. 8
Nov. 27	Nov. 1	Sept. 5	Apr. 25	Mar. 18
Dec. 7	Nov. 11	Sept. 15	May 5	Mar. 28
Dec. 17	Nov. 21	Sept. 25	May 15	Apr. 7
Dec. 27	Dec. 1	Oct. 5	May 25	Apr. 17

Concrete Mixtures for Various Types of Construction

Types of Construction	Proportions			Gallons Water per Sack Cement When Sand and Gravel Are:		
	Cement	Sand	Gravel	Wet	Moist	Dry
Thin, Reinforced Sections 2 to 4" thick (ornamental concrete benches, fence posts, milk cooling tanks, concrete plank)	1	2	2	3½	3¾	4½
Exceptional Water Tightness and Resistance to Wear—4 to 8" thick (Watering troughs, tanks, silos)	1	2	3	3¼	4½	5½
General Reinforced and Water Tight Work 8 to 12" thick (basement walls, outdoor floors, pavements or steps)	1	2½	3½	4½	5	6½
General Mass Concrete 4 to 12" thick (indoor pavements or floors—not basement, wall curbs, nor walks)	1	2	4	4¼	4¾	6½
Concrete of Moderate Strength—not water tight. (Footings, foundation walls, well casing and other construction below ground or base course where topping is to be applied)	1	3	5	5	6	7

(Courtesy North Carolina Extension Service.)

Capacities of Silos in Tons

CAPACITIES OF ROUND SILOS

Inside Height of Silo, Feet	INSIDE DIAMETER OF SILO, FEET							
	8	10	12	14	16	18	20	22
20	17	26	38	51	67			
21	18	28	41	55	72			
22	19	30	43	59	77			
23	20	32	46	63	81	103		
24	22	34	49	67	86	110		
25	23	36	52	71	91	116	143	
26	24	38	55	75	97	123	152	
27	25	40	58	79	102	130	160	
28	27	42	61	83	109	137	169	205
29	28	44	64	87	114	144	178	216
30	30	47	67	91	119	151	187	226
31	31	49	70	96	125	158	196	237
32	33	51	74	100	131	166	205	248
33	35	53	77	105	137	174	215	260
34	36	56	80	109	143	181	224	271
35	37	58	84	114	149	189	234	282
36	39	61	87	118	155	196	243	293
37	40	63	90	123	161	204	252	305
38	41	66	94	128	167	212	262	316
39	43	68	97	133	173	220	272	328
40	45	70	101	138	180	228	282	340
41		72	105	143	187	236	291	352
42		74	109	148	193	244	300	363
43			113	154	201	253	310	375
44			117	159	207	261	320	387
45				165	215	269	330	399
46				170	222	277	340	412
47					229	285	350	424
48					236	293	361	436
49						301	371	449
50						310	382	462

CAPACITIES OF RECTANGULAR SILOS

Multiply the length by width by height of settled silage. This gives the cubic feet of silage. The table shows the average weight of silage for any given depth. Multiply and get the total pounds of silage. Divide by 2,000 to get the number of tons.

Depth of Silage	Average Wt. In Lbs. Per Cu. Ft.	Depth of Silage	Average Wt. In Lbs. Per Cu. Ft.
11	26.8	23	35.2
12	27.6	24	35.9
13	28.3	25	36.5
14	29.1	26	37.1
15	29.8	27	37.7
16	30.5	28	38.4
17	31.2	29	39.0
18	31.9	30	39.6
19	32.6	31	40.2
20	33.3	32	40.9
21	33.9	33	41.5
22	34.6	34	42.2

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◆ Best of all, this implement costs far less than a cheap suit of clothes. In a sense, the farmer got the major parts of this crane when he bought his Ford Tractor.

Ford TRACTOR

◆ The power unit for this crane—the hydraulic mechanism and controls—are standard equipment on every Ford Tractor. So are the lift arms which, with this implement, raise and lower its boom. Thus, there are no screws and jacks, no block and tackle, no gears and cranks needed . . . and none to pay for, either! Of course these same standard Ford Tractor features are "parts" for dozens upon dozens of other implements, too.

◆ To get all of the fascinating story of "Ford Farming" see your nearby Ford Tractor and Dearborn Implement dealer, or write us direct.

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Free Booklet: Send postal card or letter for booklet on ES-MIN-EL to Tennessee Corporation, Grant Building, Atlanta, Georgia, or Lockland, Ohio.

TENNESSEE CORPORATION
Atlanta, Georgia — Lockland, Ohio

(*Continued from page 59*)

is assured. They are used until it is found that this particular 4-way combination is no longer effective and another of the same type is replaced. The 4-way hybrid formation after this long selecting period (six to seven years) is a relatively simple one. The diagram given below is an example of a type of successful combination. It is used just as long as it is not exceeded by a new 4-way formation coming up from the inbreeding (proving) ground.

Everyone agrees that it is possible over a six to seven-year period to obtain, through successful "nicks," a hybrid chick whose performance will exceed that of the stock from which the original recruits were selected. The unanswerable question is, "Can the triple shift method make more progress in six to eight years than the hybrid vigor obtained from the 4-way incrossbred hybrid technic during that same period"?

Betting Odds Favor Hybrids

At the moment, the "betting odds" in the industry are favoring the new 4-way hybrid chick. Personally, I do not believe either of the two methods will consistently win for any long period of time. There will always be competition and the result will be better chickens whether they are "Smith's Triple Shifters" or "Jones' 4-way Hybrids." Jones will go back to Smith for new lines to inbreed. While Jones is inbreeding, Smith will be using his triple shift. The chicks that each has for sale at the same price level will not be remarkably different. The 4-way hybrid technic is excellently suited to mass production. For this reason alone, it may be expected that "in the long haul" the 4-way hybrids may gain a slight edge on total performance. All in all, professional poultry breeders are like coaches trying to predict the outcome of a football season.

While writing this, I have just received report number 11 of the Council of American Official Poultry Tests, New Brunswick, N.J. When those kinds having more than 800 birds entered in these tests are considered, egg production of Rhode Island Reds, incrossbred hybrids, S. C. White Leghorns and Barred Plymouth Rocks were the top four in 1948-49.

I have purposely limited the comparison to entries of more than 800 birds, because present day breeding methods, to survive, must produce large numbers of breeding stock. A few excellent birds are useless unless they can be multiplied by the thousands without losing their excellent qualities.

★

A tall cowboy, wearing a 10-gallon hat, was sauntering around in a large department store and the salesgirl asked if she might help him. He replied, "No ma'am, I reckon not. I ain't never seen so many things I could do without."

Public Address System is the . . .

"Ag" Leader's Best Friend

By BURNIS ARNOLD
Extension Radio Specialist
Oklahoma A & M College

As extension radio specialist, Burnis Arnold has had the opportunity to operate the public address system for all the Oklahoma A & M College extension functions.

● WE'VE ALL heard speakers approach the microphone, look it over as if it were a bugaboo, and make some remark like, "I'm not used to one of these contraptions," or "How does this gadget work?" or some other asinine statement.

During several years of experience in operating a public address system, I've never been able to quite figure out why so many people pick on the apparatus, calling it an *"outfit," "gimmick," "contraption," "gadget,"* or just plain *"thing."* Sometimes I think it's merely to cover up their own nervousness and they can't think of anything else to break the ice after they've been introduced.

While I'm on my pet peeve, I might also take a crack at the individual who likes to show off his lung power . . . and says, "You can hear me without this darned thing," steps away from the mike and proceeds to exercise his vocal cords while the sweat pours from his exerted brow. In a small gathering it is probably all right . . . there probably wouldn't be a public address system there in the first place. But for the average meeting hall you soon start to hear the shuffle of feet and a low murmur from the crowd halfway back. Why? They are having trouble hearing the speaker.

Develop "Mike Technique"

Then there is the person who hasn't heard of the expression, "mike technique" . . . or at least wasn't around when instructions were passed out to tell what a microphone was to be used for. Maybe he will have finished his opening statement before he starts roaming around on the stage, pacing back and forth like a bull in a pen. From then on you might catch the middle of a sentence now and then as he passes the mike on his return trip.

Granted, once in a while a microphone will go on the blink or you get a loose connection around your power input . . . there are a dozen and one things that can go wrong and usually happen, if they're going to, at the most crucial moment. It might be the operator's fault and it might not. But in either event, I don't think any speaker is justified in taking a crack at his best friend, the public address system. Some of his remarks may bring a weak titter from the crowd, but they're not amused by the remark . . . more often they're laughing at the speaker's inability to get his bearings, knowing that he is only killing time.

Now for the Suggestions

I've made plenty of mistakes in my strictly amateur operation of public address equipment and would hereby like to offer some suggestions to you county agents, vo-ag teachers, soil conservationists and others who use a sound system from time to time. (1) In the first place, get a good piece of equipment . . . don't try to use one that's expected to break down in the middle of the program because more than likely it will do just that. (2) Always carry an extra microphone along. They're mighty fragile things at the best and can go out right at the time when you need them most. (3) Check your sound accoustics before the program starts. You'd be amazed what you can do by moving a speaker slightly to avoid that echo coming from the ceiling or back wall. (4) If the microphone has any eccentricities, tip off your program guests in order that they can use the system to the best advantage. (5) And by all means, have someone stay by the amplifier to adjust the gain once the program gets underway. Too many otherwise good shows have got off to a poor start due to a feedback from the mike. (6) Between programs take care of your public address system. It can't be tossed around like an old shoe and be expected to operate efficiently the next time you want to use it.

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What's New In . . .

Swine Husbandry

By C. M. VESTAL
Purdue University

● THE MOST discussed potential development in swine husbandry during the past year was the addition of the "animal protein factor" to feeds of vegetable origin for the purpose of improving ration efficiency.

It has long been recognized that protein feeds of animal origin are usually superior to those of vegetable source in swine nutrition. Some of this superiority can be attributed to protein quality, some to mineral content, but the elusive factors responsible for a part of the benefit from the animal protein feeds are apparently components of the so-called "animal protein factor" (APF).

The vitamin or vitamin-like factors of APF are now the basis of much research. Their effect on swine nutrition and swine production is of primary interest not only to the research worker but to the feed manufacturer and swine grower as well.

It has been shown in nutrition studies that APF stimulates the growth rate of pigs when fed with a ration of vegetable origin. The same is true for poultry and some of the small laboratory animals. The place of APF in swine nutrition should develop rapidly, in view of the fact that research on this problem is in progress at a large number of the agricultural experiment stations and in different commercial research laboratories. Certain biosynthetic products synthesized by microorganisms are becoming available as sources of APF and are now being used in research with swine.

Some of the most important known feed sources of APF are fish products, liver meal, meat products and milk products. Apparently the "animal protein factor" has contributed to the overall effectiveness of these products in swine rations, but as a separate factor in swine nutrition it is in the experimental stage. Its place has not been established in the practical feeding of swine on the farm. Until more definite knowledge is obtained regarding its value when fed with different efficient swine rations and pastures, swine producers should perhaps mark time in their enthusiasm for solving their feeding problems with APF.

Purdue Feeding Experiment

Some new light was shed on an age-old question recently when the Purdue Experiment Station reported the results of four experiments on the effect of penning up hogs for fattening as compared with hogs receiving exercise.

It was shown that the confined hogs ate more feed, resulting in a faster gain, with a trend toward greater economy of feeding. It was also shown, that to be most effective, the confinement should start with 50 to 60-pound pigs rather than 150-pound hogs as is often the practice on farms.

From the standpoint of carcass quality, it was found that the exercised hogs had more desirable carcasses, as indicated by more firmness and a thinner layer of back fat at the same market weight of 225 pounds. These results do not apply to feeding hogs on pasture, but were obtained by self-feeding hogs on dry-lot rations. The exercise was provided by driving the hogs one-half mile twice a day.

Night Lighting for Hogs

Night lighting for market hogs, while not entirely new, is new enough to be in the controversial stage as to its effectiveness. Some prominent hog feeders use the practice of night lighting with electricity and are convinced that it increases the efficiency of the gains of their hogs because of increased feed and water consumption. They also claim that less self-feeder space and water trough space are necessary for a given number of hogs when they have light at night as well as during the day. Limited experiments at two experiment stations have not indicated these advantages. These differences should be a stimulus to the early solution of the problem.

Save More Young Pigs

Each year more thought and effort is given to methods of saving newborn pigs. One of the newer trends which should not be overlooked is the better pregestation feeding of sows and gilts. The ability of these animals to store in their bodies certain vitamins or vitamin-like factors which are supplied by green pasture, and which seem to be essential to the best development of the unborn pigs, should not be overlooked in planning for a good crop of spring pigs.

These stored supplies of vital nutritional factors help to bridge over the gap between pasture seasons, when the winter gestation ration may be deficient in some of these factors. Better pastures and extended pasture seasons for brood sows and gilts seem to be a part of a good, practical plan for saving young pigs.

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You as a livestock grower and Armour as a processor are a "team" in the production of meat. Your job is to operate at low cost, so that meat will be available at prices people are willing and able to pay. Armour, in turn, will continue to perform the services of processing and distribution efficiently and well –in order to create better markets and return full share of all consumer dollars to you.

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4-H News for CLUB LEADERS

California Comes In

Ralph Parks, specialist in agricultural engineering, University of California, instructs Don Robinson, Santa Ana, Calif., in the 4-H Club Tractor Maintenance Project, while H. W. Longfellow, Orange county farm adviser, and Jim Wilson, General Petroleum Supervisor Technical for Southern California, take part in the three-day Tractor Clinic held by the agricultural extension service, January 24, 25 and 26 at Ontario, Calif. The tractor maintenance project is the first nationally-sponsored 4-H project in California and the state 4-H club winner will represent California at the 1950 Club Congress.

★

1950 County Agent Committees

Robert A. Dyer, president, National Association of County 4-H Club Agents has announced the following committees for 1950.

CONSTITUTION—Henry Krebser, Chairman, Connecticut; George Burkhardt, New York; William Davenport, New Jersey; Milford Atwood, Massachusetts; Martina Patterson, West Virginia; Ruth Weston, New Hampshire; Robert Ewing, Massachusetts.

PUBLIC RELATIONS—Andrew Olson, Chairman, Michigan; Harold Sparks, Michigan; Don Stiles, New York; A. L. Kidd, New Jersey; Clara Oberg, Minnesota, James Childers, Kansas.

OLDER YOUTH—Isabelle Barden, Chairman, Vermont; Mildred Fizer, West Virginia; Ella Kringlund, Minnesota; Warren Brocket, Connecticut; Don Eppelheimer, Michigan; Robert Pinches, Minnesota.

PUBLICITY AND HOUSE ORGAN—Bruce Buchanan, Chairman, Vermont; Harold Aase, Vice-Chairman, Minnesota; Robert Brush, Kansas; James Halm, Michigan; Margaret Edwards, New York; Juanita Brown, West Virginia; Madeline Stephenson, Maine; Martin Hanson, Wisconsin; Mary Todd, New Jersey; Robert Deming, Connecticut.

DISTINGUISHED SERVICE—Edna Coulson, Chairman, Minnesota; Joe Turpin, New Jersey; Willard Bitzer, New Jersey; Merle Cunningham, New York, Cecil Eyestone, Kansas.

PROFESSIONAL IMPROVEMENT—Tilford Cocks, Chairman, Connecticut; Ray Lamb, Michigan; Sarah Harmon, West Virginia; Merle Eyestone, Kansas; John Stookey, New York.

★

How to Wear the 4-H Emblem

Wearing the 4-H emblem is a privilege reserved for 4-H club members, leaders and others who have been granted that honor.

County agricultural agents, 4-H club agents and home demonstration agents know that 4-H members take great pride in wearing that emblem.

From now on, 4-H members, regardless of where they live or travel, will wear a 4-H jacket which is the same as all other 4-H members will proudly display; a dignified jacket with a 4-H emblem that is distinctly characteristic of the nation-wide 4-H clubs.

The state club leaders and the extension subcommittee on 4-H club work have designated a green gabardine jacket with the 4-H emblem on the left front ONLY as the jacket which 4-H members will wear. All county extension agents and volunteer 4-H leaders are in a position to help 4-H members in carrying out this nation-wide plan.—*R. A. Turner, USDA Extension Service.*

★

Change Name of 4-H Contest

Announcement has been made of a change in emphasis in the 4-H Electric program, which in 1950 will be known as the 4-H Farm and Home Electric program, according to the National 4-H Committee.

There will be no changes in awards, or donor, which is the Westinghouse Educational Foundation. Awards comprise gold-filled medals, all-expense trips to the National 4-H Club Congress, Chicago, and six $300 college scholarships to county, state and national winners, respectively.

Who will win in 1950?

Here are the 1949 winners

Here, with John L. McCaffrey, president of International Harvester, are the four national winners in the 1949 National 4-H Field Crops Program. They are James W. Bequette, Edgar, Montana; Robert C. Young, Riverhead, New York; Melvin Boerger, Plain City, Ohio; and Eldon Burgess, Brush Creek, Tennessee. Each of the four was awarded a Fowler McCormick college scholarship of $300. And like 39 other state winners, each won another IH award—an all-expense trip to the National 4-H Club Congress in Chicago.

These four girls were the national winners in the 1949 National 4-H Frozen Foods Program. They, too, received Fowler McCormick college scholarships, as well as all-expense trips to the National 4-H Congress, awarded by International Harvester. Frances Cathey of Jackson, Tennessee, is shown being congratulated by T. B. Hale, IH vice president, general sales. The other winners, from left to right, are Twila Mae Whaley, O'Neill, Nebraska; Betty Ann Weingardt, Longmont, Colorado; and Betty Hughes, Bath, New York.

In 1950 International Harvester is again providing county, state, and national awards in both the Field Crops and Frozen Foods Programs. Here are worthwhile projects for club members in *your* area... splendid opportunities for *your* local club. Full details can be had from the Extension Service of your State Agricultural College or your county agricultural extension agent. Perhaps *your* club will have a state or national winner! International Harvester Company, Chicago 1.

mid-century 1950

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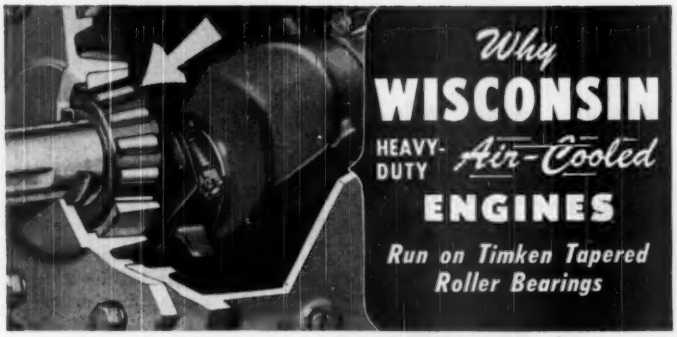

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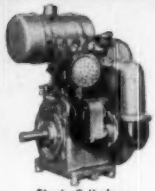
The use of Tapered Roller Bearings in ALL Wisconsin Engines from the smallest to the largest . . . 3 to 30 hp., single cylinder, 2-cylinder and 4-cylinder . . . is typical of the engineering diligence devoted to providing the user with "Most H.P. Hours of on-the-job service."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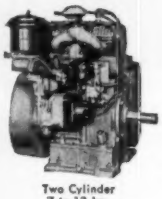
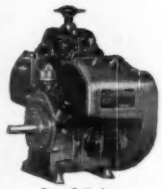

Two Cylinder
7 to 13 hp.


Four Cylinder
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The 1950 Belgian Review is now available for distribution to county agents and teachers of vocational agriculture and farmers. It carries a complete list of awards of Belgian shows at leading state fairs, the National Belgian Show and International. It also carries ads of breeders who have Belgians for sale. We also have available a list of other breeders who are offering Belgians for sale. Write to . . .
BELGIAN DRAFT HORSE CORP.
H. J. Brant, Sec'y. Dept. 7 Wabash, Ind.

NATIONAL 4-H CLUB WEEK—March 4-12

Arkansas Vo-Ag Officers

Arkansas Vo-Ag Teachers' Association officers. SEATED (l-r): W. W. Haynes, Brinkley, president; Sid Purtle, Prescott, vice president. STANDING (l-r): C. R. Wilkey, state supervisor of vocational agriculture; Little Riddling, Waldron, secretary; and Raymond Hinkley, Parkin, treasurer. The group represents a total of 94 years of service to vocational agriculture in Arkansas.

★

Shorthorn Bull Placing

(*See page* 40)

CORRECT PLACING 3-4-2-1

In placing this class of Shorthorn bulls, you should immediately recognize the good balance, thickness and especially the fullness of quarter of the number 3 bull. He appears to have a much more masculine head and crest, as an indication of a bull of great vigor, and he also shows considerably more bone than does number 4.

We could criticize number 4 as being slightly pinched in the quarter and at the tail head, and not carrying as deep and full in the lower quarter as does number 3. He is a very straight lined calf and more closely approaches the balance and also the low-set type of the number 3 bull.

This class divides itself readily into two groups and we place the number 2 bull over number 1 on the bottom pair placing, because he shows more depth of body and fullness in the quarter. He can justifiably be criticized for a weakness in the head, in that he shows lack of width and to a degree, a lack of masculinity as compared with the number 1 bull.

We do fault number 1 particularly because he is shallow bodied, cut up in the flank and shows a tendency to be narrow in body width.

★

Duroc Sow Placing

(*See page* 48)

OFFICIAL PLACING 1-3-4-2

This class of mature sows is an excellent one from the standpoint of showing differences in type and emphasizing desirable and undesirable characteristics of a brood sow.

No. 1 was placed at the top of the class and over No. 3 because she is a very

When writing advertisers please mention *Better Farming Methods*

feminine type of sow; deeper in the side than No. 3; shows at least six well-spaced and well-developed teats compared to five for No. 3; and carries her width evenly from front to rear and well down into her hams without showing a tendency to lardiness, as exhibited by the No. 3 sow. No. 1 is very smooth throughout; shows good quality in her hair coat; stands on straight, well-placed legs with strong pasterns; and shows a neat, well-placed ear, indicating that she is the type of sow that will have no trouble in seeing. We will, however, give No. 3 the advantage of being trimmer in the jowl, blending more smoothly from the neck into the shoulder, and carrying perhaps a bit more width through her lower ham. Both of these are very good in type and should be able to farrow and raise large litters of pigs.

No. 4 follows quite closely the type of our No. 3 sow, but was placed below her because she is not as deep in the rear flank; lacks the spring of rib of the No. 3 sow; is not as uniform in her width as seen from the rear; is cut up in the crotch; and appears to be somewhat shorter than No. 3. She is a neat, feminine, well-balanced sow, with a good head and ear, good quality, and legs well out on the corners. She is, however, a little too fine in her bone, and the rear sections of her udder appear to be breaking down.

No. 2 was an easy bottom of the class. She is definitely of the more lardy type than the rest of the sows in the class; shows considerable wrinkling over her sides and through the ham; does not exhibit the balance of the other sows; has the largest, heaviest ear of any sow in the class; and shows more tapering from her back down to her hams than any sow in the class.

★

Better Hybrids Coming

Further increases in corn yield from better hybrids are in prospect. In Iowa, hybrids have swept the field until it is hard to find any open-pollinated corn from which new inbred lines could be started. Yet at a field day at the State College Farm this fall, G. F. Sprague of the U.S. Department of Agriculture in charge of cooperative corn breeding work in Iowa, showed visiting farmers nearly 300 hybrid variety plantings. These included widely grown hybrids and also a number of experimental hybrids from new strains and new combinations of inbreds. Some of the experimental hybrids, Sprague reported, have outyielded well established hybrids by as much as 10 bushels an acre the last three years of testing.

★

"So Jones is dead. Did he leave his wife much?"

"Oh, nearly every night."

Clean Sweep and a Faster Job
The New Idea Mower is completely power operated; hitched in a jiffy to any modern tractor; unmatched for smooth cutting and easy handling. Stronger, sturdier, always reliable.
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And positive pick-up too! NEW IDEA double-curved teeth make a clean sweep of every crop. They're tough, resilient, quickly and easily detachable. No other tooth design can match their gentle, thorough windrowing and tedding. No other rake can give you this important plus-performance feature!

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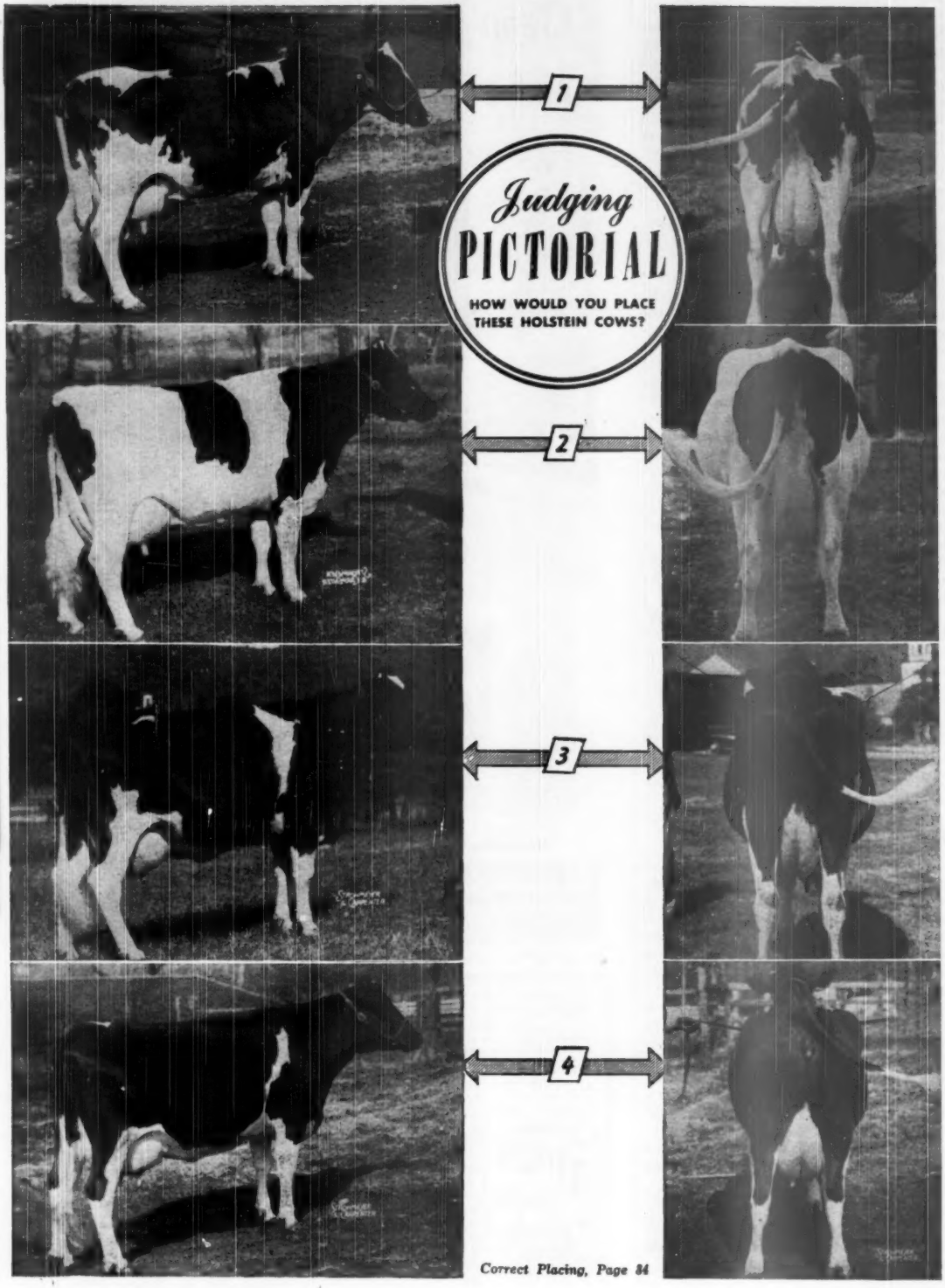
"So Jones is dead. Did he leave his wife much?"

"Oh, nearly every night."



Correct Placing, Page 84

Planning an FFA Banquet?

The season is approaching for a concentrated schedule of FFA parent and son or father and son banquets. From my observations during the past three years, attending about 65 banquets, and my experience in conducting 18 banquets, I would like to pass on some personal opinions, both good and bad.

We should first ask the question, "What are our objectives in conducting a banquet?" Is it to entertain our parents? Is it to acquaint our parents with our program? Is it to demonstrate some abilities in parliamentary procedure and public speaking? Is it to promote good public relations? If we answer all these questions affirmatively, we obligate ourselves to a worth-while project. If one or more is answered negatively, I believe we are overlooking a good objective.

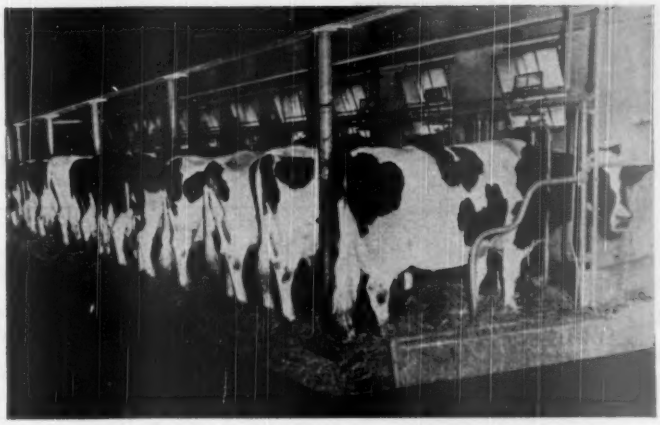
With these objectives as a background, let's explore the situation to see what makes a banquet tick. Following is a list of good points that help make it successful.

1. Attractively decorated banquet room. Flowers always add. One chapter presented each mother with a red rose. Crepe paper helps if an attractive scheme is used.
2. Place cards and programs attractively used.
3. Mint cups designed as favors.
4. Future Farmers conduct their parents to their seats when banquet is ready. Seat their mothers.
5. Parent and son are more desirable than father and son.
6. Start banquets at the stated time.
7. Late comers should be seated by the sentinel.
8. Soft music while courses are served.
9. Toastmaster have a sense of humor and keep the program "alive."
10. Members participate in the program.
11. Speakers should be limited to ten minutes. Main part of the program presented by boys on their accomplishments and program of work.
12. Local color added by including colored slides of FFA activities and projects.
13. Comical stunt included in program.
14. Program not to exceed ninety minutes.
15. Faculty and wives, school board and wives, American Farmers and Honorary Farmers and wives to be invited each year.

Try to avoid the following: 1. Dry speakers, 2. Long, drawn-out programs, 3. Poorly-prepared, cold meal, 4. Uncomfortable physical conditions, 5. Slow serving.

A banquet is a show window of your department. Make it good.—*D. R. Purkey, Editor, Ohio Future Farmer.*

For additional banquet suggestions, write to Better Farming Methods, Mt. Morris, Ill.



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See a line-up of registered Holsteins in any barn and you're looking at a production line built to produce profits. That's a fact proved on farm after farm.

Why is this so? Because Holsteins give lots of milk, lots of butterfat. They have a long productive life. They utilize feed (especially home grown roughage) efficiently. Holsteins produce big, husky calves, easy to raise for replacements or profitable as vealers—while old cows have a high beef value. In simple words, they give you heavy production at low cost.

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LARGE, STRONG CALVES
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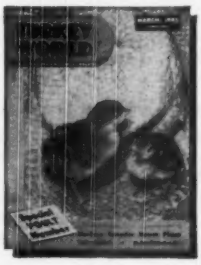
Brattleboro, Vermont

There's a Future with
HOLSTEINS



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V. J. Lancaster, Turlock, California: "When we started using the Marlow Milker the 33 registered Jerseys we were milking averaged 34.94 lbs. fat production per month. Ninety days later, their average had increased to 40.36 lbs. per month."

W. H. Deters, Sr., Quincy, Illinois: "After using several other leading milkers for the past 30 years we heard of the Marlow Milker, and bought one and will say it is the finest milker we ever used, we are more than pleased with the Marlow. We haven't shipped a cow since using your milker, before we shipped about 30 cows per year. Now the cows' udders are in fine condition."

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Definitely Easiest on Udders

What's New In . . . Dairy Husbandry

By E. J. PERRY
Rutgers University

● IN RECENT comparisons of grass silage and corn silage at the New Jersey Station, one pound of nutrients in the former was found to be equal to one pound of nutrients in the latter for both growth and milk production.

Grass silage cut at the pre-bloom stage runs approximately the same in protein as corn silage, but the latter, when cut at the near mature stage, has more nutrients than most grass silage.

Therefore, grass silage should be fed a little more liberally than corn silage to compensate for the nutrients of the replaced corn. The results are a greater consumption of protein and a milk that contains more carotene and has an improved flavor.

Better and longer preservation of bull sperm by the use of antibictics has been given attention in several states during the past year. Trials at the Pennsylvania Agricultural Experiment Station have revealed that penicillin can be used to improve the breeding efficiency of a good percentage of relatively infertile bulls. When 1,000 units were added per ml. of diluter, an increase in conception rate was brought about in 15.3 percent of the cows inseminated.

The important task of reducing feed costs continues. When a concentrate mixture of four southern-produced by-products was tested against a standard grain mixture, the milk yield was approximately the same. The work was done by North Carolina State College of Agriculture and the USDA Bureau of Dairy Industry. In the mix were 375 pounds of dehydrated sweet potatoes, 375 pounds of dried citrus pulp, 125 pounds of peanut meal and 125 pounds of cottonseed meal. The standard or check concentrate ration included 400 pounds of corn meal, 300 pounds of ground oats, 200 pounds of wheat bran, and 100 pounds of cottonseed meal. The experimental mixture cost $19.28 less per ton than the other, or $1.39 less per 100 pounds of total digestible nutrients.

Once a Day vs. Twice a Day Feeding

Is the feeding of a herd once a day instead of twice a day justified on the basis of labor saved? Dawson and Kopland, USDA Bureau of Dairy Industry, found that two times feeding resulted in the cows eating 10 percent more alfalfa hay, producing six percent more milk and requiring 70 percent more labor for the feeding. They figured that a 20-cow herd would return a net income above feed cost and cost of labor for feeding, of approximately $28.37 on the one time system when milk was selling at $5.25 a hundred pounds and grain was worth $80 per ton, alfalfa hay $35, corn silage $8 and labor $1 per hour. The increase of $1.14 a day from the two times practice was deemed worthwhile. It was thought likely, however, that the margin of difference would be reduced a little as the size of herd increased.

Wood Molasses For Dairy Calves

Wood molasses, although somewhat unpalatable, is of value for growing dairy calves. Blosser, Scott, Erb and Shaw, State College of Washington, got one pound of gain for every 10 pounds of the molasses fed to their dairy heifers. The five animals in the molasses fed group gained an average of approximately 1.29 pounds per day and the five in the control group gained an average of one pound. There was no difference in rate of growth in the height at the withers.

Conduct Tests on Milk "Let Down"

All experienced dairymen know that a wide variation exists among cows when it comes to the time required to stimulate "let down" of milk and the degree or speed of the "let down." Knoop and Monroe, Ohio Agricultural Experiment Station, have found that some kind of preliminary treatment pays. They tried seven different procedures, including no treatment; dry hand massage; use of strip cup; cleaning udder with damp cloth; cleaning udder with cloth removed from hot water (120° F.); cleaning with the hot water, plus use of strip cup; and actually bathing the udder with hot water, plus use of strip cup. Simply taking two streams of milk from each quarter didn't bring about enough "let down," but a ten second massage with a damp cloth proved to be just as effective as the wiping of the udder with a wet hot towel, or washing it with hot water.

Something New in Judging

Studies of the relationship between form and function are continuing to reveal information which will probably lead to a de-emphasis of some points that were previously thought to be important in selecting or judging cows.

Based on years of investigation at Beltsville, W. W. Swett reports that large

"milk veins" and "milk wells" in a cow's abdomen, and a network of veins on the udder, have little or nothing to do with denoting the amount of milk she will give. Through every cow's udder goes approximately 400 pounds of blood per each pound of milk produced.

Work at the Iowa Agricultural Experiment Station failed to indicate any correlation between slope of rump and production, or slope of rump and tilt of udder, or tilt of udder and development of fore udder.

How Good Is Molasses?

For several months molasses has been a top concentrate for dairy cows from the economy standpoint. The large supply has caused the price to drop 50 percent below what it was a year ago. This situation has prompted many dairymen to ask, "Just how good is molasses?" When mixed with regular, palatable grain mixture, the feeding value of cane molasses, sometimes called "blackstrap," is approximately 90 percent of that of corn meal or hominy feed. However, when it is diluted and sprinkled over unpalatable hay or other roughage of lowered quality, it can be worth more than an equal weight of corn meal because it induces an increased consumption of such roughage.

Feeding costs can frequently be cut by getting more hay into the cows. The common amount of molasses to put with the grain mix is 200 to 250 pounds. Some dairymen say that more sometimes causes the ration to be too laxative if second or third cutting of alfalfa is being fed.

It has been conclusively demonstrated that one of the best uses to which molasses can be put is as a preservative for grass silage. Once a dairyman has a silo full of spoiled silage, due to the so-called wilting method failing, he will never again ensile grass or legumes without a preservative.

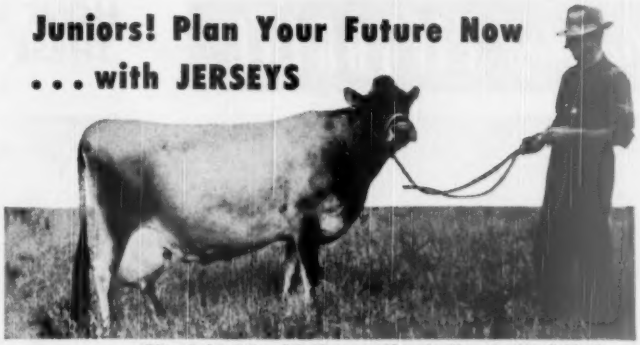
Approximately 90 per cent of the nutritive value of the preservative is still available when the silage is fed. When 75 pounds of the molasses is used with a ton of grass and 100 pounds with a ton of legumes, the quality of the ensiled material is almost certain to be high. Inadequately preserved grass silage is frequently the cause of off-flavored milk, whereas first class, sweet smelling silage helps to impart a yellow color to the milk and improves its palatability.

Farm Sanitation Booklet

A 24-page booklet telling how to control external parasites of livestock and poultry with Kreso Dip is available from Parke, Davis & Company.

General farm sanitation is discussed. Send your request direct to Parke, Davis & Company, Detroit, Mich.

Juniors! Plan Your Future Now . . . with JERSEYS



Silken Lady's Ruby of F, 19 years old and still paying big dividends

Suppose Dad had helped you buy this grand old lady when she was a calf and you were 12 years old. You would now be 31, for she is 19. In those 19 years she would have given you 10,048 pounds of butterfat and 181,977 pounds of milk, plus 18 husky offspring! And, she would still be bringing you profits, for "Ruby" produced 12,082 pounds milk, 646 pounds butterfat, in the first nine months of 1949, and is still milking!

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Ruby's record shows what can be done with economical, profit-making Jerseys—the breed that matures early, lives long, and ranks highest for butterfat test.

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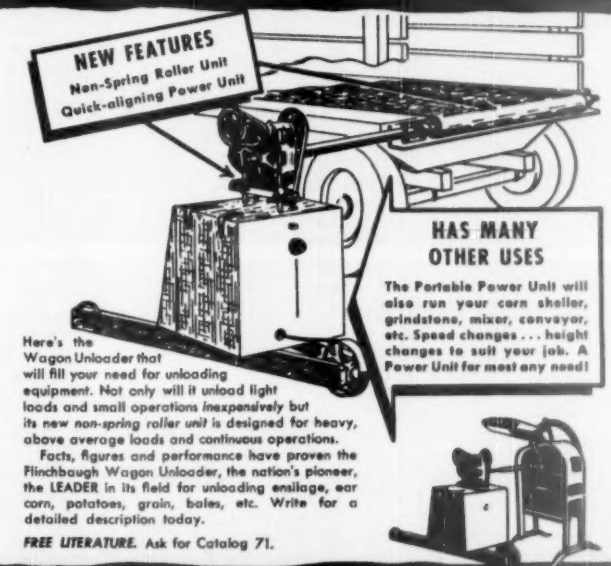

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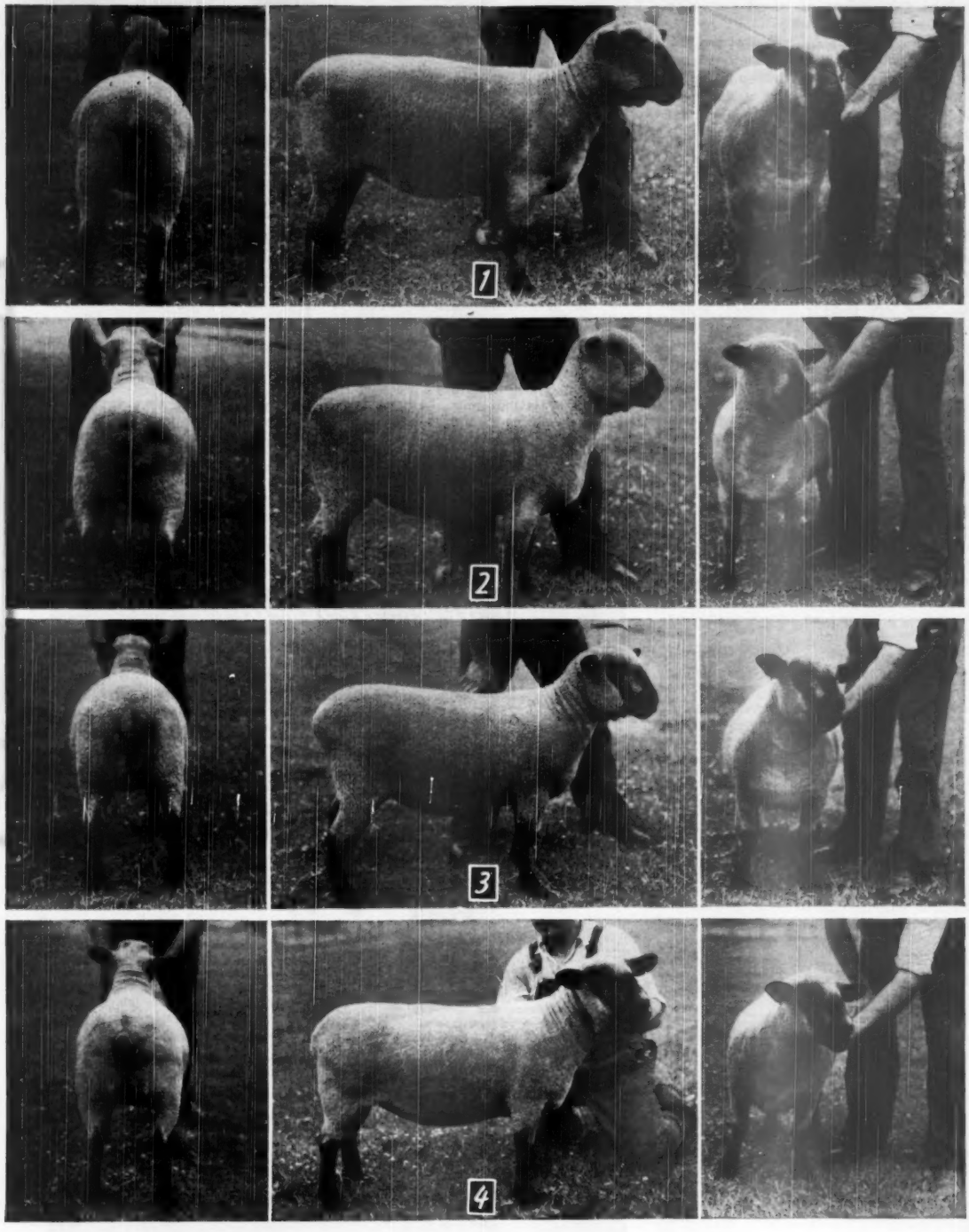
Judging PICTORIAL

HOW WOULD YOU PLACE THESE HAMPSHIRE EWES?

See Page 77 for Correct Placing



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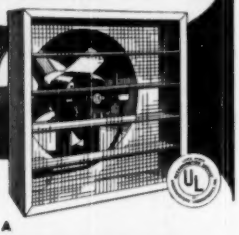

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What's New In . . .

Sheep Husbandry

By E. P. ORCUTT
Montana State College

● MOST MONTANA stockmen know that research men have discovered that a bull passes on an important characteristic to his sons—and daughters—which cannot be seen or evaluated by looking at the sire.

This characteristic is the ability to make rapid gains and use feed at a high level of efficiency. Montana has pioneered this investigation and this "sire testing" has already been adopted by a considerable number of purebred breeders and put into operation right on their own ranches. They, too, are pioneering because this is the first known grower application of this "sire testing."

Start Project in 1948

These same, curious, Montana research men at the experiment station in Bozeman began to wonder if this sire influence that had been proven and established with cattle sires might not also apply to sheep sires. So a project was set up in November of 1948 and again, for the first time in history, the influence of the stud ram upon sons was measured in terms of rate of gain when on full feed.

This first experiment was concluded on last April 19; the yearling rams were sheared on April 20; and a small gathering of interested sheepmen saw the rams and heard the results on April 21. Eight or nine ram breeders were present in the group of people.

This first year of stud ram testing must be considered as strictly preliminary. Next year and the year after may bring forth quite different results. This is always the case with livestock research because of a great number of "variables," such as animal differences, weather and climate variations, feed differences, and the need for a substantial volume and uniformity of results before dependable conclusions can be drawn. The figures at the bottom of the page are interesting but must be considered only a beginning.

Study Three Different Breeds

Seven stud rams were tested. Two were Rambouillets, two were Columbias and three were Targhees. The experiment station owned four sires and the other three were owned by well known ram breeders, W. A. Denecke, Bozeman, and Henry Yoppe, Livingston. Both of these men furnished the ram lambs, risked the death loss, and paid their feed bills.

Eight sons of each stud ram were considered to be a minimum number for dependable testing. These eight sons were "randomized" from the entire 1948 ram lamb crop of each stud ram. This merely means that human influence in the choice of the lambs was eliminated. They were more or less chosen by lottery. There were 174 ram lambs randomized by sire groups and eight obtained from each group.

The ages of these selected ram lambs were considered satisfactorily close. The oldest was dropped on April 3 and the youngest on April 26, 1948.

The 56 lambs were started on "conditioning feed" on November 13, 1948. Each group was in a separate pen. Full feeding was started on November 30, at which time careful individual weights were taken. The ration was hand-fed until December 28 and was composed of 40 percent barley, 30 percent oats, 20 percent dried molasses beet pulp, and 10 percent linseed meal with wild hay, fed free choice until March 12, when alfalfa hay was substituted. Beginning December 28, the ration was self-fed.

From January 1 through February 6 there was some trouble with the lambs, most of which were in lot 5. There was one case of scouring and one of stiffness.

	Lot 1	Lot 2	Lot 3	Lot 4	Lot 5*	Lot 6*	Lot 7*
Breeds	Columbia	Columbia	Targhee	Targhee	Targhee	Rambouillet	Rambouillet
Ave. beginning weight	105.1	113.3	119.8	106.0	126.0	118.5	125.6
Ave. final weight	155.7	178.1	176.9	169.5	186.6	182.6	193.7
Range of final weight	123 to 198	152 to 211	161 to 193	150 to 195	159 to 212	167 to 192	174 to 237
Ave. total gain per head	50.6	64.8	57.1	63.5	60.6	64.1	68.1
Range of total gain per head	35 to 77	39 to 84	27 to 80	48 to 89	29 to 80	46 to 81	60 to 87
Ave. daily gain per head	0.36	0.46	0.41	0.45	0.43	0.46	0.49
WOOL							
Ave. grease weight per head	13.12	13.66	13.86	12.43	16.1	13.11	13.91
Estimated shrinkage	46%	45%	50%	47%	48%	52%	56%
Estimated clean weight per head	7.08	7.51	6.93	6.59	8.37	6.29	6.12

*Figures do not include rams which did not finish trial

When writing advertisers please mention *Better Farming Methods*

Two lambs died out of this pen and one lamb was taken out on account of urinary calculi. Because of the trouble in January and early February, the ration was "lightened" by reducing the barley and raising the beet pulp by 10 percent, respectively. This was the only change in the concentrate ration and apparently improved the self-fed ration.

Figures Give the Results

The only brief manner of presenting the final figures is by tabulation. Just the more interesting and conclusive figures are listed.

The extreme range in total gain per head is from 50.6 pounds to 68.1 pounds. The eight rams in lot 7 averaged 135 percent of the gains made in lot 1. Three lots, nos. 2, 4 and 6, made approximately the same total gains per head, only a gross difference of 1.3 pounds.

Among the individual rams, there was one ram in each pen, except lot 1, which gained a total of 80 pounds or more. The highest individual gain in lot 1 was 77 pounds. The lowest gaining lambs can also be selected from the table, as were the high gaining ones.

Only two rams sheared 18 pounds or more of grease wool. One was in lot 7 and was the heaviest ram among all groups on April 19, 237 pounds. A Targhee ram in lot 5 was the heaviest shearing ram, 18.4 pounds, and he was the second heaviest weight ram of all, 212 pounds.

J. L. Van Horn and Alva Flower, Montana State College department of Animal Industry and Range Management, were the project leaders in this work. It is intended to continue the study so that this preliminary information can be either substantiated or contradicted. The number one reason ram breeders are interested in this work lies in their hope that a dependable method can be devised whereby they can progeny-test their own stud rams and identify their ability to sire "high gainers."

★

Hampshire Ewe Placing

(*See page* 74)

CORRECT PLACING 4-3-2-1

No. 4 is a good type Hampshire ewe. She has a strong back and is lowset, wide, deep and rugged with good bone. She is very symmetrical, particularly carrying out stronger and fuller in the rump and upper thighs than does No. 3. No. 3, however, is a nice, deep bodied, compact ewe with a short neck and legs, but she is peaked at the dock and is lacking in fullness of thigh viewed from the side.

No. 2 carries out fuller in her rump than does No. 3, but No. 2 is a longer legged, longer necked, rangier ewe than No. 3. No. 2 is not quite as deep in the twist as is No. 3, and No. 2 is less attractive in the head as she has a little too much wool on her face and ears for an ideal Hampshire.

Nos. 2 and 1 are both more upstanding in type than the top ewes in the class, but No. 2 is a straighter backed ewe with a deeper twist and bigger leg than No. 1. The latter should be criticized rather severely for her straight hind legs, cut-up twist and light hindquarters.

★

Ga. FFA Makes War on Rats

The Gordo, Ga., FFA Chapter has a rat killing campaign underway in cooperation with the veteran farmers in the Gordo school district.

Before launching the campaign, the boys studied how destructive to property rats are and how dangerous to health they can be if not controlled. They were reminded of the terrible disease, bubonic plague, that raged in the 1600's, killing scores of people.

The boys were made conscious of the need of rat control in their own county, town and community by the county sanitation officer, Mr. Warren. They also had the state representative, Mr. Kyle, with them.

One member who thought his home was free of rats put out poison and reported finding nineteen dead rats.

MORE THAN 1/2 THE CATTLE IN THE WORLD HAVE BRAHMAN BLOOD!

Regardless of the climate or the altitude, wherever Brahmans have been introduced into a land, they have consistently improved the quality of the cattle in that area. The answer is "heterosis", or hybrid-vigor, a quality imparted only through the crossbreeding of distant breeds of the same specie. A quality which means rapid growth, increase in pounds, stamina and high resistance to insects and disease.

Write to the American Brahman Breeders Association for complete information.

ABBA — AMERICAN BRAHMAN BREEDERS ASSOCIATION

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HELP FARMERS INCREASE PROFITS
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DR. LEGEAR PRODUCTS

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Effectively controls Cecal (Bloody) Coccidiosis for as low as ¼c per bird and prevents it for less than 1c per bird. Simply mix with feed or water.

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A one feed herd treatment that gets both Large Round Worms (Ascarids) and Nodular Worms in 1 day. Mix with feed. No bother to use. Pigs and hogs actually like it!

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A 2 day flock treatment for Large Round Worms and Cecal Worms. Simply mix with the feed and birds worm themselves. Does not interfere with laying.

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Especially recommended for milk cows and dairy barns. Made according to an approved formula. Does not contain DDT and is not carried over into the milk. Contains Pyrethrum and Piperonyl Butoxide.

Write for complete facts on these important farm profit aids.

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BOX 33 KINGSTON, N. H.

Helpful Booklets
See Page 102

What's New In . . . Poultry Husbandry

By **MORLEY A. JULL**
University of Maryland

● ONE OF the most outstanding features of the poultry industry has been the continuous expansion of broiler production.

A new development in broiler production has been the demonstration by numerous growers that it is possible to produce broilers averaging three pounds in about 10 weeks on about three pounds of feed per pound of gain in weight. That accomplishment represents a marked improvement in efficiency of feed utilization in poultry meat production. Faster growing strains of broilers, better balanced diets, and more efficient management are largely responsible.

Heat Broiler Houses by New Method

A new method of heating broiler houses involving the conversion of steam into hot air through the medium of heat exchangers has been used with success.

Complete control of fowl typhoid in broiler flocks by repeated agglutination tests of breeders, all reactors being eliminated, has been shown to be a possibility. Pullorum antigen consistently identified a higher percentage of reactors than did gallinarum antigen by both the plate and tube methods.

Phenols Prevent Coccidiosis

Laboratory tests have demonstrated that certain bisphenols and diphenols (compounds of the dihydroxy-diphenylmethane type) may be fed in the diet to afford protection against cecal coccidiosis.

The feeding of a phenothiazine and nicotine-bentonite mixture in dry mash is apparently an effective and practical method of removing cecal worms and ascarids (roundworms that invade the intestinal tract) in chickens.

In the field of poultry nutrition, further evidence has been obtained, indicating that at least one unidentified vitamin other than B_{12} is contained in the so-called animal protein factor. During the past year, several vitamin B_{12} carriers were made available to feed companies. This is of great importance to poultry producers because mashes fortified with vitamin B_{12} should be utilized more efficiently by growing chickens and laying hens. It is also worthy of note that specialized vitamin A concentrates are now available.

Female sex hormones may be used in fattening turkey toms, particularly from the standpoint of having them in prime market condition earlier than untreated toms.

Demonstrate Value of Thyroprotein

Since it has been demonstrated that thyroprotein may be of value in feeding poultry, the fact should be noted that the incubation period of eggs laid by thyroprotein-fed hens is liable to be about 12 hours longer than the incubation period of eggs produced by untreated hens.

A point of interest to those who kill and dress poultry for market is the amount of blood contained in a bird's body and the relative amount lost upon bleeding. In birds weighing about one pound, the blood in the body amounts to about 10 percent of the body weight. In females over three pounds in weight, there is a marked decrease in the amount of blood per unit of body weight. In males over three pounds in weight, there is a steady decrease in the amount of blood per unit of body weight, males weighing eight or nine pounds having only about 7.5 percent of their total live body weight consisting of blood. When birds are bled in the killing process, about 35 to 50 percent of the total blood volume is lost.

Washing Eggs Accepted Practice

The washing of soiled eggs has become an accepted practice, but it is important that the temperature of the water or other solution in which eggs are washed should be considerably higher than the temperature of the eggs, a water or solution temperature of about 160° F. apparently being desirable. The hatchability of hatching eggs is not affected by washing, but market eggs that have been washed should be marketed as soon as possible.

Plucking machines have come to be regarded as standard equipment on many commercial poultry plants.

Free Poultry Chart

This chart giving tips on feeding, management and equipment from the time the chick is a day old until hens start to lay, is available from the Borden Company, 350 Madison Ave., New York 17, N. Y.

Farmers can see at a glance the equipment, feed and management required in the poultry business.

get your FREE copies now!

TWO FACT-PACKED BOOKLETS ON

How to Insulate Poultry Houses and Dairy Barns for Greater Production and Profits

These two factual booklets are packed with money-saving ideas that every farmer will find helpful.

One shows how to build insulated laying and brooder houses that help step up egg and meat production by protecting the flock against drafts and sudden temperature changes. The other shows how to build insulated dairy barns that help improve milk production by keeping cows warmer, healthier in winter, cooler in summer.

Booklets tell what materials to use, and how. Get free copies for your file from the Celotex Dealer in your community, or mail coupon below today.

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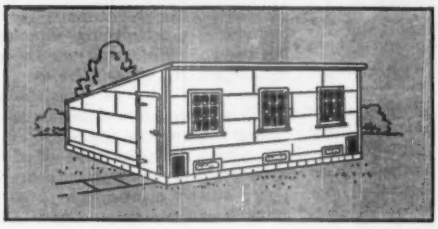
for modern, labor-saving brooder and laying houses, dairy barns and milk houses



With these practical, complete working drawings, any farmer can easily and economically construct farm buildings that save time and work, and increase profits. Show how to build insulated structures that are cooler in summer, warmer in winter, always weathertight and easy to clean. Designed for the Better Farm Buildings Association by famous Agricultural Associates. You can get them at nominal cost from your local Celotex Dealer.

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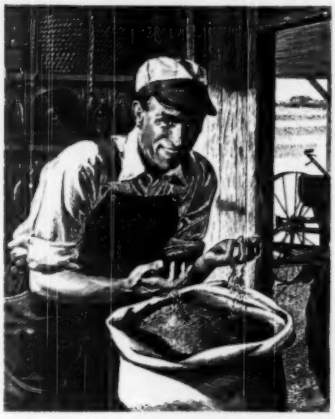
recommend this practical and convenient *natural* combination of soluble magnesia and sulfate of potash



Sul-Po-Mag

Water-Soluble

Double Sulfate of Potash-Magnesia

Rapidly increasing numbers of farmers are finding it profitable to use fertilizers containing soluble magnesia and potash in combination with other plant foods in mixed fertilizers.

Earlier maturity, healthier growth and larger yields of a variety of crops are reported by many farmers, agricultural colleges and experiment stations following the use of Sul-Po-Mag on magnesium-deficient soils.

Sul-Po-Mag is a natural combination of magnesium and potash formed in the mineral langbeinite, mined and refined exclusively by International at Carlsbad, New Mexico. Both the magnesium and potash are in water soluble form and are immediately available to crops.

Sul-Po-Mag is supplied by leading fertilizer manufacturers in mixed fertilizers or bagged for direct application to the soil.

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What's New In . . .

Crop Husbandry

By H. D. HUGHES
Iowa State College

● THE MUCH greater acre yield from such important crops as corn, oats, wheat and soybeans is, in my opinion, by far the most important crop development in our day.

I refer to the better varieties made possible by our greater knowledge of genetic laws and breeding procedures. With the same weather, soil, fertilization and cultural practices, acre yields 20 to 25 percent greater than were possible with the best of the old varieties are being obtained.

The average yield of the better corn hybrids in the more important corn states is running right at 25 percent above the best of the old sorts. This is a fact well established by voluminous and accurate records.

New and Better Oat Varieties

The new, disease-resistant oat varieties, released from the different experiment stations only about 10 years back, stepped up yields by about 20 percent. These varieties, represented by such new kinds as Tama, Boone, Vicland and Vicota, were generally planted throughout the oat belt as rapidly as seed could be increased and distributed.

And then the new Helminthosporium oat disease struck. Fortunately, there were still newer and better oats just coming on at the different stations. These new varieties were, very fortunately, resistant to the Helminthosporium disease. This new oat disease has swept all over the United States, from Florida north. Several stations have released new varieties, all with Bond as one of the parents, and all markedly superior to the Tama-Boone type in yielding power, as well as their resistance to the Helminthosporium blight.

Increase Soybean Yields

With soybeans we have a similar story. Our better knowledge of genetic laws makes it possible for our plant breeders to go forward with confidence, knowing that they can combine almost any characters that they wish in a new variety. Yields in important soybean-producing states averaged through a period of years 15, then 17, then 20 and 20.5 bushels per acre. The gradual increase in yield was due to better production methods, better cultivation and inoculation. Then came the new variety, Lincoln.

Comparative tests through a period of years and in many states showed an average yield for the Lincoln nearly 20 percent above the best of the old kinds. This variety has wide adaptation through much of the heart of the soybean-producing area.

Corn Borer Effects Production

The full import of the corn borer on corn production problems and procedures is only now beginning to be realized by the great mass of corn growers. As the most effective and applicable procedure in control, the value of DDT and similar materials, when properly used, keeps corn growers from despair. As yet, results often are disappointing, but more often, very encouraging. There is much remaining to be worked out for best procedures.

Insecticides Aid Seed Production

In areas where seed production of alfalfa has been regarded as impossible because of Lygus bug and leafhopper injury, yields of two to four or five bushels per acre are now being obtained. This has been made possible only because of the proper use of insecticides.

The use of 2,4-D or other similar material in weed control, either as a preemergence spray or applied to the growing plants, remains one of the most important developments in recent years. There still remains much to be determined as to the exact conditions under which weeds can be controlled without injury to the growing crops. But in every state, specific information is readily available as to the methods that are already proven and those that must be considered still in the experimental stage.

Better Cereal Crops

Knowledge of the marked advances made in producing better cereal crop and bean varieties is generally available and applied. The advances in better forage crop varieties is not so well known, but important advances have been made. For alfalfa, it is the Ranger and Buffalo varieties, with their marked resistance to wilt; also, others less widely adapted or known.

For bromegrass, it is the Lincoln, Fischer and Ochenbach varieties, with their greater tolerance to summer heat when in the seedling stage, their greater yields, and their rapid establishment.

When writing advertisers please mention *Better Farming Methods*

For sweet clover, it is the Madrid Yellow, with its high nitrogen and organic matter in the fall of the seeding year as a plow-under crop, and its good seed producing characteristic.

For lespedeza, there are the early, disease-resistant and vigorous Iowa No. 6, No. 39 and No. 48 varieties, with seed now generally available. And among the legumes, the relatively new ones are the birdsfoot trefoil and ladino clover, both of outstanding value in pasture seedings.

A statement of important new advances in the handling of crops would not be complete without a mention of the increased appreciation on the part of folks generally for an increased acreage of grass and legume crops, from the standpoint of soil conservation and in maintaining the productivity of our soils. Also, the marked advances in better methods of handling our hay crops, both from the standpoint of the quality of the hay produced and reduced labor and cost.

★

New Crops for the Farm

(*Continued from page 19*)

perilla to compete as a crop.

So far, these have all been oil crops and we could have mentioned a few more as possibilities, but they are not all oil crops. Guar, a legume, can be found growing commercially in the irrigated sections of productive valleys in southern California and Arizona. These plantings have been sponsored chiefly by General Mills. The plant is a good soil builder and grows well under dry conditions.

In parts of Texas it is recommended as a green manure and cover crop. Industrially the seed furnishes a vegetable gum which has many uses in food, paper, and textile products. Guar is the only domestic source that shows promise of providing an adequate and reliable supply of gum-containing seed.

Perhaps there are others just as worthy of mention, or even more so, than those discussed, but the list could never be quite complete as long as research continues and new material is introduced.

Silage Facts Booklet

"Silage Facts" is a well-illustrated booklet which has been prepared to concentrate and summarize all of the miscellaneous information on silage into one handy reference.

Material in this booklet has been obtained from the textbooks in many states and government publications on the subject of silage.

If you want a copy of this handy reference, send your request to the Independent Silo Co., St. Paul 4, Minn.

INSURE RAIN for '50 with a HALE

At left — Last summer this Hale Type CIR Irrigation Pumping Unit was photographed while irrigating the potato field pictured below. Type CIR pumps 1250 U.S. G.P.M. at 100 lbs. . . . will irrigate over 100 acres.

"In fifteen years, I've never gone through a growing season when I did not need irrigation at all . . . and most years it has been a life saver!" That is not just one man's experience; it has proved true year after year, with few exceptions.

Now is the time to buy a HALE Irrigation Unit . . . before dry weather makes it too late.

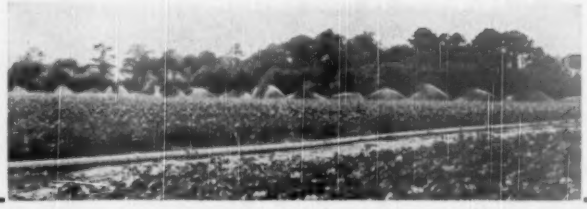
Rugged, efficient, dependable Hale Irrigation Pumping Units are available for irrigating 1 to over 100 acres . . . Designed for use with overhead, underground or portable systems.

•Type CIR 1250 GPM at 100 lbs.
•Type CFIR 800 GPM at 100 lbs.
•Type DFIR 800 GPM at 60 lbs.
(DFIR is Diesel-Driven)
•Type W 300 GPM at 78 lbs.
••Type PE 150 GPM at 50 lbs.
Type ENP 50 GPM at 43 lbs.
This Unit is electrically driven
Type NP self-priming portable
60 GPM at free flow.

•Skid or trailer mtd. ••Portable: in frame; on skids; or on wheels.

Write today for detailed information. Please state number of acres; source of water.

HALE FIRE PUMP CO. Conshohocken, Pa.



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to FFA & 4-H members, Vo-Ag Students, and Farmers

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To encourage use of high quality seeds we are sponsoring this contest as a means of introducing Imperial Quality Seeds.

THREE INDIVIDUAL GRAND PRIZES OF $300.00—six others of $100.00

Here is an opportunity to not only make good money by raising bumper, high quality crops with Imperial Triple-Tested Seeds, but also win one or more of these big cash prizes.

FREE SEED for plots is available for 4-H, FFA and Vo-Ag Students thru their leaders.
Write for details.

HOW TO ENTER . . . Write for complete details, rules, list of prizes and entry blanks to distribute to your farmers and students.

IMPERIAL SEED quality seeds COMPANY
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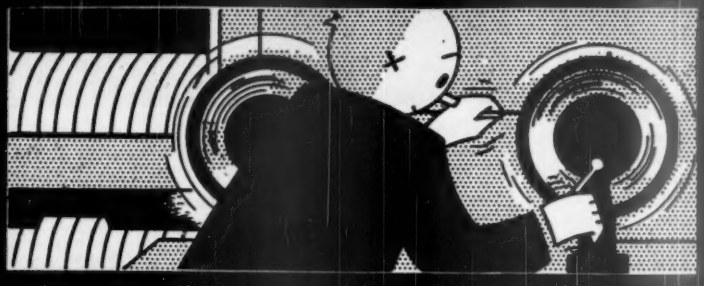
FILM CARE AND MAINTENANCE

The projectionist will have a great deal to do with prolonging the life of the film. Most damage that occurs to film is due to careless handling and improper threading at the time of the showing.



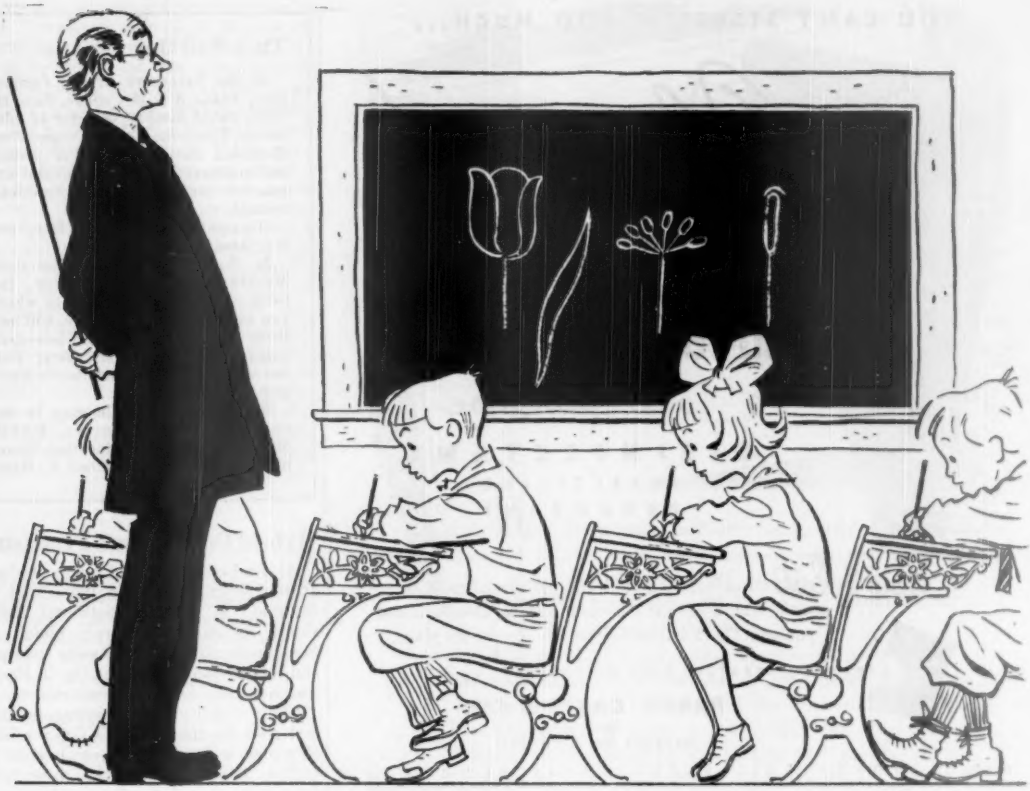
The common sources of film damage are:

1. Equipment in poor condition.
2. Dirty projector.
3. Improper threading.
4. Careless rewinding.
5. Incorrect splicing.
6. Thoughtless handling of film
7. Improper storage.

Film damage can be avoided if the following practices are followed:

1. Keep projector clean and in good repair.
2. Thread projector properly.
3. Occasionally check film as it goes on take-up reel for damage.
4. Avoid use of bent reels.
5. Rewind and inspect film carefully. Repair brakes, tears and torn sprocket holes. Make neat strong and proper splices.
6. Store film in cool place. (55° to 70° F)
7. Clean film at frequent intervals.
8. Keep film off floor.
9. Never cinch film on reel.

Reprinted by permission of the Audio-Visual Projectionist's Handbook, $1 per copy, postpaid, 813 North Dearborn St., Chicago 10, Ill.



We wish we didn't have to PRINT this ad!

We'd rather show you how much audio-visual methods can add to your whole instruction program—make the subjects really *come alive!*

Ask your nearest Bell & Howell representative to arrange for you to see our special sound film, "The Show Must Go On." It tells just what features you should look for in a projector to make your audio-visual program most effective.

You know that good projection is essential in your work. With the Bell & Howell Filmosound you get unobtrusive operation . . . dependable performance that means most hours of projection time. And it's guaranteed for life*. With six-inch built-in speaker, $399.50. (Larger, separate speakers available.)

*During life of the product, any defects in workmanship or material will be remedied free (except transportation).

You buy for a lifetime when you buy **Bell & Howell**

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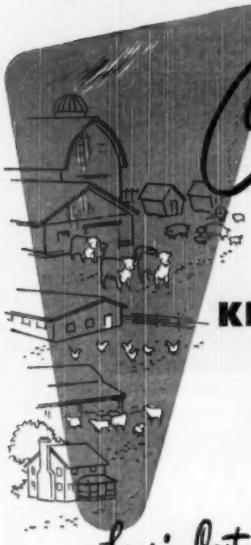
YOU CAN'T STRESS IT TOO MUCH...



Clean!

IT COSTS SO-OO LITTLE
IT REPAYS SO-OO MUCH

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all-purpose
DISINFECTANT
INSECTICIDE
DEODORANT

Low in Cost—one gallon makes 100 gallons of reliable disinfectant. Use freely in buildings, on livestock and poultry. There is nothing so safe to take its place.

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DETROIT 32, MICHIGAN

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LIVESTOCK—
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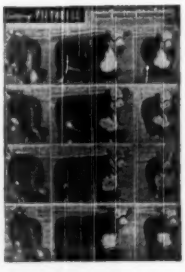

Judging pictorials, which have been featured in Better Farming Methods, are available to county agents, vo-ag teachers and other agricultural leaders.

Each judging pictorial usually consists of four different animals. Two or three different views of each animal are pictured. Placings are provided for all pictorials. Reasons for placings are available for many of the pictorials. These judging pictures provide suitable judging practice for FFA and 4-H members.

We now have judging pictorials of New Hampshires (chickens), Guernsey Cows, Jersey Cows, Holstein Cows, Shorthorn Bulls, Shorthorn Heifers, Hampshire Ewes, Polled Hereford Heifers, Percheron Horses, Berkshire Gilts, Angus Cows, Milking Shorthorn Cows, Brown Swiss Cows, Columbia Ewes, Hampshire Gilts, Hereford Heifers, Yorkshire Gilts, Southdown Market Lambs, Duroc Jersey Barrows, Shropshire Ewes, Tamworth Gilts and Brahman Heifers. Price 5 cents each.

Send check or money order. NO COD shipments.

Better Farming Methods **Mount Morris, Ill.**

They Will Buy

At the Extension Agents' Conference, Texas A & M College, June 16, 1949, David Meeker, director of education, Dearborn Motors Corporation, discussed the techniques of selling the products of the agricultural extension service to the American farmer.

His remarks, "They Will Buy," are reprinted in booklet form.

In the introduction of the talk, Meeker states, "Your market, the farm people you serve and to whom you offer extension products, will buy them in tremendously increased amounts if you will sell them with the vigor, the skill, and the enthusiasm they deserve."

Reprints of this talk may be secured by writing to Mr. David Meeker, Director of Education, Dearborn Motors Corp., Detroit 3, Mich.

Hybrid Onions Look Promising

At least one F_1 hybrid onion produced at the Arkansas Valley Branch of the Colorado A & M Experiment station shows resistance to purple blotch and has comparable yield to some commercial Sweet Spanish onions, A. C. Ferguson, associate horticulturist, reports.

Work is still in the experimental stage and seed for the hybrid is not available. However, cooperative research with the USDA is continuing, using new techniques developed for the production of F_1 hybrids in much the same manner as hybrid corn is produced.

According to Ferguson, field and storage diseases and thrip injury cause an estimated $500,000 damage each year to the onion crop of Colorado, which is valued at an average of $6 million a year. Inbreeding and crossing work is being done experimentally at Fort Collins.

★

Holstein Cow Placing

(*See page* 70)

CORRECT PLACING 2-3-4-1

REASONS—No. 2 is the outstanding cow of this class for all-round type score. No. 2 is very superior to 3 in width at pin-bones, width at hips, spring of rib, circumference of heart girth, and width of chest. In other words, 2 is chosen over 3 in all points governing constitutional strength. The udder of No. 2 is held close to the body and achieved its capacity through width and length, being better balanced in capacity of individual quarters than is the high quality udder of No. 3.

No. 2 is very superior to No. 3 in hind legs—hind legs of No. 3 approach effective nature in sickling of the hocks. The only point on which No. 3 excels No. 2 is head character and evidence of high

quality. She is more refined than No. 2.

No. 3 is placed over No. 4 because of her extreme dairy temperament, as evidenced by quality of hide, refinement of head and neck, and general angularity as compared with the tight rib, heavy meat, and coarse rump and shoulder evidenced in the photograph of No. 4. Udder carried by No. 3 shows higher rear attachment and better placing of rear quarters than does the udder of No. 4. The only character in which No. 4 exceeds No. 3 is feet and legs structure. The front legs of No. 4 are particularly exemplatory.

No. 4 is selected over No. 1 because of greater constitutional strength evidenced by heart girth, width at pins, hips and in the spring of rib as well as width of chest. No. 4's udder is held closer to the body, is much better balanced in substance of quarters, and the teats of No. 4 are symmetrical and uniform while the rear teats on the udder of No. 1 are long and ill-shaped. No. 4 excels in straightness of hind legs and is much superior in the hoof or foot structure.

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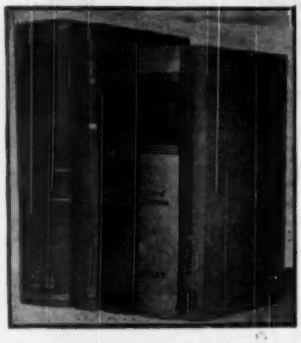

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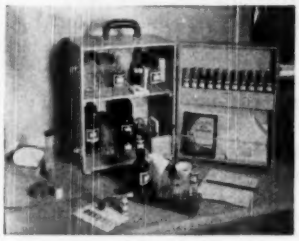

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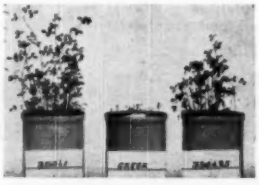

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Book Reviews

KNOWING YOUR TREES, by Collingwood and Brush, published by the American Forestry Association, 519 17th Street, N. W., Washington 6, D. C. Price $5.

Here is a book that should be on every ag leader's reference shelf. Trees, like people, are known best by their characteristics and important contributions to society.

The authors have prepared information on 150 outstanding American trees.

Actual photographs of each tree—winter and summer—its leaf, bark, flower and fruit, are presented along with a map showing where it grows. In all, there are more than 800 illustrations.

The text, briefly and simply written, describes the botanical features of each tree, its range and habits, its uses and economic importance, the meaning of its scientific name—all of the many details that distinguish it from its fellows of forest and roadside.

AGRICULTURAL EDUCATION IN COMMUNITY SCHOOLS, by H. M. Hamlin, published by The Interstate, 19-27 N. Jackson St., Danville, Ill.

The author suggests how agricultural education might function in our community public schools. It is for teachers and prospective teachers, administrators, members of boards of education and advisory councils, and all others interested in agricultural education.

The aim has been to provide a look at the woods before looking at the trees. A possible philosophy of agricultural education is presented with its implications for the function and structure of agricultural education in our schools.

COOPERATIVE EXTENSION WORK, by Kelsey and Hearne, published by the Comstock Publishing Co., 124 Roberts Place, Ithaca, N. Y. Price $4

There has been a need for one book to cover the whole story of extension work. The book was prepared for use by upper classmen and graduate students in cooperative extension education. It is a result of an effort to bring together the best information available on the work of the extension service.

The book can be a definite aid to preservice induction and in-service training. Leaders in related agencies and organizations will find it helpful.

RURAL ARITHMETIC, by Orville L. Young, published by the Bruce Publishing Co., 540 N. Milwaukee St., Milwaukee 1, Wis. Price $1.96

This book is designed to be used as a text in rural high schools by those students who are not preparing for college, and as a supplementary book for agricultural courses.

The problems were used in agricultural classes while the book was being developed, in an effort to have the problems stated in language that is perfectly clear and understandable to the student. The text contains problems which are encountered frequently by the farmer and which the average person can solve.

FORAGE CROPS, by Gilbert H. Ahlgren, published by the McGraw-Hill Book Co., 330 W. 42nd St., New York 18, N. Y. Price $5

This new college text considers all phases of forage crop production. The author covers all the important hay and silage crops, their culture and management, adaptation, uses in mixtures and seed production.

Discussions are also presented on labor-saving machinery, hay standards, grassland farming and insects and diseases affecting some of these crops.

The text is designed as a companion volume to Wilson's Grain Crops in departments which teach separate courses on grain and forage.

FARM STRUCTURES, by Barre and Sammet, published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N.Y. Price $7.

"Farm Structures" introduces the Ferguson Foundation agricultural engineering series. The book treats important technical aspects necessary for an engineering approach to farm structures problems.

Included is essential information on (1) the function analysis to farm structures, (2) space utilization and equipment arrangement in a functional program, (3) the selection and utilization of materials for farm structures, (4) the design of ventilation systems for livestock and crop storage structures, (5) economic aspects of farm structures, and (6) the elements of structural design for light-frame buildings.

In addition, a demonstration of how these principles are applied and a detailed analysis of typical farm structures is given.

OUR RURAL COMMUNITIES, by Laverne Burchfield, published by the Public Administration Service.

The purpose of this book is first, to present a brief picture of the major problems that challenge our rural communities today, and, second, to provide a guide to the very considerable body of literature that has grown up around these problems.

Its aim is to open up and make more readily usable extensive material upon which a program of action can be based. This book does not attempt to present a definite program of action. It does, however, contain material that would be of great assistance to those who are planning action programs.

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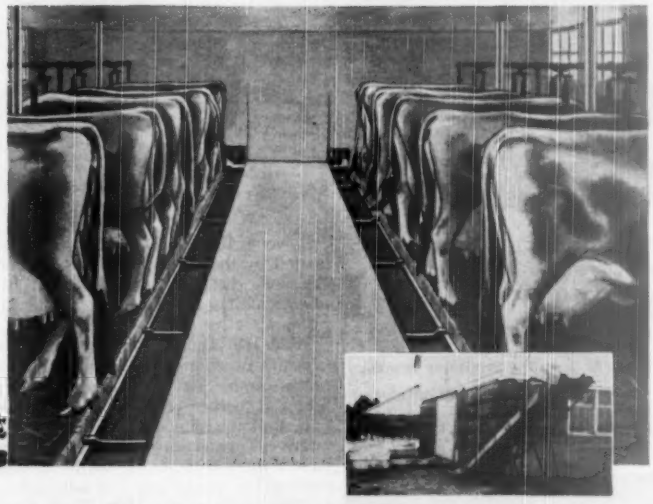

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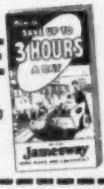

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New Fruit Varieties

(*Continued from page 50*)

shown in the east and mid-west is indicated by the introduction in those areas of such varieties as the Fuzzless Berta, Garden State, Flaming Gold and Early Flame.

PLUMS: Though the native and exotic species of plums extend over a greater area of the United States and Canada than any other of our fruits, practically all commercially important production derives from areas growing the European and Japanese plums. In the northeastern states, the former are best adapted.

The work of the New York Station, leading to the introduction of Albion, Hall, and Stanley, resulted from interest in this group of plums. On the Pacific coast, where the most intensive commercial centers are located, the Japanese varieties are most used for fresh shipment, although both species are extensively planted. The newer sorts are listed in the table. Undoubtedly the most popular of these are the Late Duarte and Red Rosa, but it seems certain that other new varieties will eventually replace many of the older types still being grown.

APRICOTS: The climatic requirements of the apricot make it a peculiarly west-coast product. Several new varieties have been introduced in the northwest, but California has lagged in the development and exploitation of new sorts, mainly because of the outstanding horticultural characteristics of its leading varieties, Royal, Blenheim and Tilton. Possibly the most thoroughly tested and promising of the varieties listed in the table are Perfection and Riland. Earligold and Reeves perform well in warm-winter regions.

ALMONDS AND OTHER NUTS: The almond industry is almost entirely limited to California. Nearly all varieties grown are of local origin, and few can be called new. The Jordanola and Harpareil, however, are meeting particular demands, and more new varieties are on the way.

Through the southern states, interest has centered in the tung nuts. This new industry now has available clonal varieties to replace seedling orchards. Other nut crops have also contributed their share of new varieties.

GRAPES: Though grapes are grown extensively throughout many regions of the United States, the California production so far outweighs the tonnage produced elsewhere that its newer varieties should be of particular interest.

Of those listed, Cardinal, a table grape, has been favorably received and is already in production over a wide area. Other varieties include table, wine and raisin grapes. Varieties for eastern states are even more plentiful.

SMALL FRUITS: Small fruit industries are typically based on varieties with rather limited climatic adaptation, so that each section of the country has developed its individual list of varieties. As these are so numerous, even an attempt to mention the more promising would be outside the scope of this article. However, the work of the several state agricultural experiment stations, the USDA, as well as that of interested individuals, has resulted in a host of improved varieties.

As the small fruit industry of California and the northwest centers about the strawberry and bramble fruits, the list in the table is limited to these fruits. In other regions, different species may be more important. Particularly interesting has been the development of greatly superior blueberry varieties through the eastern and northern states in the past decade.

Many Agencies Contribute

For the sake of brevity, proper credit has not been given in the text to the many agencies assisting in the perfection of our horticultural varieties. The United States Department of Agriculture, the several state agricultural experiment stations, private institutions and individuals have all contributed.

★

Diseases of Farm Animals

(*Continued from page 46*)

thenic acid deficiency are striking. Pigs lose their appetite, slow up in gains, then lose weight and die. They also have severe diarrhea (frequently bloody), loss of hair, weakness and incoordination.

Pyridoxine must also be present to prevent nerve degeneration in pigs on a sythetic diet. This factor, however, does not seem to be the limiting one in natural diets.

Barley, oats, liver, brewers' yeasts and concentrated milk products contain protective factors against nerve degenera-

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tion in swine. Treatment of pigs with incoordination is usually unsuccessful because nerves with this type degeneration do not repair themselves to any great extent.

Report Choline Deficiency

Choline deficiency has not been reported in swine-fed natural rations, but from studies with purified diets, it is obvious that a deficiency of this factor can readily be produced. The most striking symptom is the development of a fatty liver.

Work from Washington State College demonstrates conclusively that choline is needed for successful reproduction in swine. When gilts were maintained on choline-deficient diets they farrowed on schedule, but there was a heavy death loss among the pigs and those that survived for a time showed leg weakness, muscular and nervous incoordination, subnormal weaning weights, and, at autopsy, typical fatty livers were found.

Beef and dairy cattle and sheep show symptoms of phosphorus deficiency in many areas and under various feeding conditions in the West. Typical manifestations of phosphorus deficiency include depraved appetite, emaciation, stiff joints, irregular estrus, small calf drop, and low weaning weights on calves.

Studies at the Utah Station show that parturient hemoglobinuria or nutritional red water, in high-producing dairy cows, responds to intravenous injections of disodium phosphate and to drenching with this material or bone meal.

Cattle Respond to Therapy

Reports also show that beef cattle on feed are responding to phosphorus therapy in cases of nutritional red water. This type of red water should not be confused with the highly fatal, infectious bacillary hemoglobinuria.

Livestock men in the West are beginning to depend on phosphorus supplements such as bone meal or a mixture of equal parts of bone meal and salt to prevent phosphorus deficiency.

Salt and Bone Meal Cut Death Losses

Decreasing death losses from poisonous plants among both cattle and sheep on the range by feeding bone meal and salt appears to be a fact from practical experience. Carefully controlled studies are needed, however, on this interesting observation.

★

National 4-H Week, March 4-12

The 1,850,000 rural young people who are members of the 4-H clubs that are located in every county of the United States, Alaska, Hawaii and Puerto Rico, will join in observance of their annual National 4-H Club Week, March 4-12.

March 14 issue

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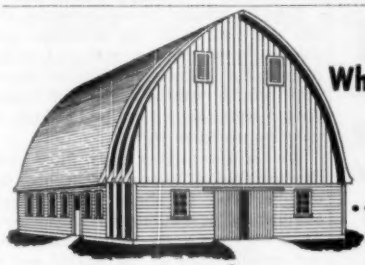

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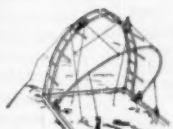

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Visual Aids Page 98

What's New In . . .

Soil Husbandry

By W. A. ALBRECHT
University of Missouri

● FOR THOUSANDS of years we have said *"Creation started with a handful of dust."* As for "What's new in soil husbandry?" most significant is the new thinking and concern about what's in that dust, or soil, that makes things grow.

Trace Elements Are Important

1. More elements coming from the soil are proving to be essential. The list of inorganic, or ash, elements coming from the soil for the nutrition of plants, animals and man is getting larger. For a long time the chemists considered the soil's contribution to creation to include seven elements for plants and nine for animals and man.

The three additional elements for all life as its combustible bulk, namely carbon, hydrogen and oxygen, come from the air and water. Nitrogen, calcium, phosphorus, potassium, magnesium, sulfur and iron come from the soil for plants except as some nitrogen can be taken from the gaseous supply in the air.

New knowledge of requirements from the soil now adds the elements manganese, boron, copper, zinc and molybdenum. For animals, our limited knowledge would remove boron and molybdenum from that list but add sodium and chlorine, common salt.

We are now talking about these newer five as "trace" elements because they are required in almost unmeasurable amounts, or so small as to be mere traces. They were not appreciated until persistent irregularities in the health and the reproduction of animals coupled with finer chemical tests brought first the theoretical consideration and then the demonstration of their essentiality.

More significant is their essentiality in the processes of creating proteins rather than carbohydrates. Through proteins they contribute to the growth of the body rather than to providing energy or fuels. Their shortages in the soil show up first as a deficiency for legumes, the better forage feeds. They seem to be tools in the life processes more than materials of construction. Because we do not know how they function, but, nevertheless, know of disaster in animal and human health through their absence from the soil, our animals must provide the experimental tests for their shortages in, and successful applications on, the soil.

More than 100 fertilizer companies now have them available in their fertilizers. They may well be going on many of our soils as tests of shortages through their benefits and as a kind of health insurance.

Soils Low In Nitrogen

2. The nitrogen deficiencies in our soils are becoming more grave. While lime, legumes and livestock are a combination once considered equal to the task of upkeep of the soils in organic matter and nitrogen, too few legume crops have been plowed back into the soil for that. While legumes may fix nitrogen, they have not built up the soils in practice. Their protein nitrogen has gone to make protein in livestock and moved off the farm instead. Livestock does not create protein but only assembles it. Consequently, our soils are going lower in nitrogen in spite of our talk about lime, legumes and livestock for soil building.

Fortunately, the chemical conversion of air nitrogen into fertilizers has given us salts of nitrogen to demonstrate what extra nitrogen in the soil will do. It has given increased bushels of corn per acre through more ears per acre—rather than larger ones—by more stalks per acre in heavier rates of planting. It has given more protein per acre too, and higher concentration of it in both the grain and the ensilage from the stalks.

More fertilizer nitrogen on the soil has come to mean less purchase of protein supplements in feed to balance the value of corn as such. The yields of wheat and the protein concentration in it as "hardness" or "softness" are also subject to the amount and season of fertilizer nitrogen applied on the soil growing it.

Need Balance of Essential Elements

3. Deficiencies in the soil of more of the essential elements are expectable. Agricultural production is no longer a matter of merely planting seeds and expecting them to rustle through the soil for their nutrition as we once turned out a flock of sheep or a herd of cattle on the plains for muster and droving of them later in the year. Instead, crop production is the problem of having available in the soil all the elements in balance required for plant nutrition so the crop as feed and food will have all the elements and compounds required for animal and human nutrition.

Not only the one element, nitrogen, must be coming as raw material from the soil for creative services, but phosphorus, magnesium and all the others, in-

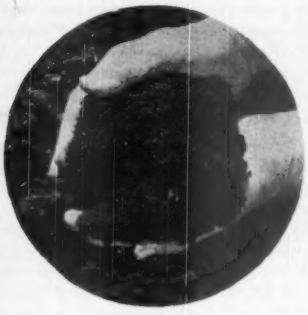
cluding those called "trace" and those still unknown.

Testing Reveals Shortages

Chemical testing of the soil is telling us of shortages of elements previously never suspected. We must be open-minded for new ideas about the fertility, the power of creation in the soil. Seemingly simple elements are the raw materials that the virgin supply in the soil, or our addition of them to it as fertilizer, must put on the assembly line of agricultural production at the starting point in the soil.

That the soil fertility is a consumable natural resource, and that we must search out and use all possible means of supplementing it, is one of the newest concepts gaining ground in soil husbandry. That it is the active fertility of the soil that is mobilizing all that is agricultural is also new in our thinking.

The Soil . . .



"Within my hand a bit of moist earth I hold, fresh from the new-turned furrow. As I pause to rest, my idling fingers gently press the fertile mold, whose mysteries have challenged long and earnest quest.

"I fain would know the story of these grains of sand, the silent legends buried with the silt and clay, and hear the rush of phantom rivers through the land to meet the vanished oceans of forgotten day.

"I think of ancient mountains, prehistoric plains, and hosts of lowly creatures bed and nourished there; of massive rocks that held these tiny grains which from the distant past their meager message bear.

"Despised earth, thy grimy blackness is a shroud for struggling forms that pulsed and perished in the past, that man might tread and till a soil with life endowed and garner stores of wealth that centuries amassed.

"Holy earth, we pledge to use our heritage and hold its conservation as a trust sublime. Our husbandry will not condone the sacrilege of wasting from thy fields the precious gifts of time."—E. M. Tiffany

It's Easy to Test Soil the Sudbury Way

LET STUDENTS DO THE SOIL TESTING

Rapid and Reliable

ORDER TODAY FROM OUR NASCO CATALOG

For all practical purposes, these quick, simple tests accomplish as much as an elaborate chemical laboratory. Greatly increased demand for soil testing means that overtaxed laboratories cannot do the work. Sudbury Soil Test Kits enable you either to do more soil testing yourself, or to put farmers in position to make their own tests.

Easy to Use Anywhere—Even in The Field!

Testing can be done "on the spot"—or samples brought inside as desired. In 10 minutes you can know the correct fertilizer formula from a soil sample. No knowledge of chemistry needed. You simply add testing solutions to the soil in test tubes, shake up, filter, and compare colors.

Color Charts are specially designed with colored acetate windows. Colors are compared by holding alongside test tube so both are read with transmitted light.

Tests for Nitrogen, Phosphorus, Potash, and Acidity (pH)

SUPER-DE LUXE PROFESSIONAL MODEL

In New Metal Case at New Low Price

This is the Kit we furnish county agents, agricultural colleges, etc.—also to farmers, nurserymen and florists.

Everything for hundreds of tests for nitrogen, phosphorus, potash and acidity. 8 big bottles of soil testing solution and 2 of clear water for field testing; 15 test tubes with colored corks; acetate color charts for all four tests; built-in test tube rack; 3 glass funnels; generous supply of round filter papers; pure tin stirring rod. Full directions with charts, which show needs of 125 farm crops, fruits, flowers, etc. Welded steel chest, size 18¾ in. x 5¾ in. **$24.95**

PROMPT SHIPMENT ON SUDBURY KITS AND REFILLS

NASCO

NATIONAL AGRICULTURAL SUPPLY CO., FORT ATKINSON, WIS.

The Agricultural Leader's Supply House

ROOF *Fence Row* WEED CUTTER

TAKES THE WORK OUT OF WEEDS

TIME-SAVER

101 USES

Saves hours of hard work, cutting everything from tough blue grass to light brush with no effort at all!

CUTS WITHIN ¼" of fence rows, buildings, trees and other obstacles. Ideal for yard, timber, garden, orchard, spot weed control.

FORWARD DRIVE optional with new Self-Propeller. Can be applied when needed, idled for close work.

SAW ATTACHMENT — optional equipment—for cutting heavy brush, light timber.

MOWS LAWNS, TOO! Just one simple adjustment. See your dealer, or for our special folder on keeping your farm LOOKING LIKE A MILLION, write

ROOF WELDING WORKS PONTIAC 4 ILLINOIS

Here They Are!

4-color Poultry Breed Pictures

Each 8½x11½ inches

Kodachromes (2x2 in.) in color

EACH PICTURE is 8½ x 11½ in. printed in natural colors on high grade enamel paper.

PRICES: Fifteen cents each, $1 for ten. Assorted if you wish. Set of 50 for $5.

Kodachrome Color Slides for Projection

PRICES: Kodachrome Color Slides (2 x 2 in.) on most of these poultry pictures, for projection on screen, at 50c per slide. (See listing below.)

P—Picture. S—Slides.

Not all subjects are available in both picture and slide. Note the key behind each subject. If both P and S appear, the subject is available both as a picture and as a slide. If only one or the other initial appears, it indicates that the subject is not available in both choices.

Set of 50

Ancona—P
Austra White (Australorp male x SCWL female)—P S
Australorp— P S
Blue Andalusians—P
Brahmas, Light—P S
Cochin, Buff—P S
Cornish, Dark—P S
Cornish, White—P S
Cornish, Wh. Lt. Red—P
Ducks, Col. Muscovy—P S
Ducks, Pekin—P
Ducks, Rouen—P
Ducks, Runner—P
Geese, Embden & Toul. —P
Geese, African—P S
Hamburg, Sil. Spgld.—P
Jersey Black Giants—P S
Jersey White Giants—P S
Jungle Fowl—P S
Lamonas—P S
Langshans, Black—P
Leghorn, SC White—P S
Leghorn, SC Brown—P
Leghorn, SC Buff—P S
Leghorn, SC Black—P
Minorca, SC Buff—P S
Minorca, SC Black—P
Minorca, SC White—P S
Mottled Houdans—P S
New Hampshire—P S
Old English Games—P
Orpington, Buff—P S
Ply. Rocks, Barred—P S
Ply. Rocks, Buff—P S
Ply. Rocks, Sil. Pen.—P
Ply. Rocks, White—P S
Polish, Buff Laced—P S
R. I. Reds, SC—P S
Sussex, Light—P
Sussex, Speckled—P
Turkeys, Black—P
Turkeys, Bourbon Red—P
Turkeys, B. B. Bronze —P S
Turkeys, Bronze—P
Turkeys, Narragansett—P S
Turkeys, Wh. Holland—P S
Wyandottes, Columbian —P S
Wyandottes, Partridge—P
Wyandottes, Sil. Laced—P
Wyandottes, White—P S

SEND CHECK OR MONEY ORDER.
No. C.O.D. Shipments.

Better Farming Methods
Mount Morris, Ill.

News from the Field

Massey-Harris Buyers' Guide

The Massey-Harris Company has announced their 1950 buyers' guide. It is now ready for distribution. It is printed in four colors. This 36-page guide includes photos and descriptions of nearly all the company's full line of farm machines and implements.

Agricultural leaders interested in a free copy should write to the Massey-Harris Company, Dept. B, Racine, Wis.

★

More "Ag" Chemicals

Through an error, the following chemicals, manufactured by the Thompson Hayward Chemical Co., 2915 Southwest Boulevard, Kansas City 8, Mo., were omitted from our January "Ag" Chemicals Issue.—*Editor*

Fertilizers—Aero Cyanamid (calcium cyanamide).

Fumigants—Terrafume 40 (ethylene dibromide); methyl bromide; Swan Brand methyl bromide; ethylene dichloride; Fumigas (carbon tetrachloride, sulfur dioxide, carbon bisulfide); Weevil Kill (carbon tetrachloride, ethylene dibromide, ethylene dichloride); Fumigant No. 6 (carbon tetrachloride, carbon bisulfide, methyl bromide); Swan Brand Spot Fumigant (ethylene dibromide); and Fumigant No. 2 (carbon tetrachloride, carbon bisulfide, ethylene dibromide).

Fungicides — Bentonite; Acme bordeaux mixture; copper carbonate; copper sulphates; Acme lime sulfur (dry); Rex lime sulfur (liquid); dusting sulfur; and wettable sulfur.

Insecticides—Tr-6 (benzene hexachloride); Toxichlor (chlordane); Ded-Tox (DDD); Swan Brand quick emulsion dormant oil spray; Acme lead arsenate; methoxychlor 50W; Black Leaf 40 (nicotine sulfate); Acme paris green; cattle grub dust (rotenone); Sabadust (sabadilla); sodium fluoride; Phenacide (toxaphene); Pyrtox WE100 and Pyrtox No. 20 New (piperonyl butoxide and pyrethrin mixture).

Hormone Sprays — Transplantone (fruit setting material); Fruitone (preharvest spray); Rootone (rooting compound); and Barsprout (sprout inhibitor).

Wood Preservatives—Tenn-Creo (wood creosote).

★

LOOK Features Northwesters

Look Magazine, in its March 14 issue, is running a two-page photo-feature of the Northwester, the remarkable pheasant-chicken cross-bred developed by James H. Knowles, Centralia, Wash. The publication will be on newsstands by March 1.

Look uses 23 pictures to tell the complicated breeding story of what is said to be the poultry industry's first true hybrid (species cross). Graphically charted is the Northwester's family tree which requires nine matings, of which five are crosses between different strains of pheasant or chicken, and one is the difficult species cross between pheasant and chicken.

★

USDA Publication on Credit

"Using Credit to Finance Farmhouse Improvements," USDA Misc. Pub. No. 701, is written for extension agents, teachers, and others who work with farm families.

This publication presents factual information concerning credit sources available to farm families for financing farm house improvements, and lists some questions for families to consider in planning for credit. Some of the suggestions are equally important to families that are paying cash for their housing improvements.

The publication is available from Supt. of Documents, Government Printing Office, Washington 25, D.C.

★

Tractor Check-Up Saves Fuel

If farmers are interested in saving money in tractor operation, the Michigan State College farm machinery specialists have a few hints.

Any of a number of things can be causing high consumption of fuel—faulty spark timing, improper valve tappet setting, leaky valves, or a partially plugged radiator.

Then they suggest a check on the setting of the load needle valve of the carburetor. Even one quarter turn of this valve beyond that which is necessary can result in the use of at least two more gallons of fuel each day.

Be careful not to set the mixture too lean, however, for it will cause the engine to misfire and lose power.

★

New Mounted Cultivator Unit

Single front wheel and front mounted cultivator made expressly for the Ford tractor by the Phillips Foundry Company. The single front wheel can be easily and quickly interchanged with the standard Ford two-wheel assembly.

Honor Va. Vo-Ag Teacher

One of the highest tributes ever paid to a vo-ag instructor was paid to J. Byron Rockwell, LaCrosse, Va. Students at the LaCrosse high school dedicated their school annual to him. In addition, a member of his young farmer class, John D. Winckler, named his farm "Rockwell Manor Farm" in his honor.

This is a noteworthy recognition of the outstanding contributions made both to youths and adults of the LaCrosse community by Rockwell during the six years he has served as vo-ag instructor.

★

Graham Wins Minn. Contest

News stories, pictures and radio programs have become a definite part of most Minnesota county extension workers' programs, and these agents are doing a good job using these important tools in their work. Their entries in Minnesota's second annual extension information contest is ample evidence of this.

Over 100 entries were made in the contest, which included sections for press, radio and visual aids.

Winner of the over-all contest for doing the best job in all three sections was Scott county's Chester Graham. He now will have possession of the extension service's plaque for "Outstanding Use of Information Tools" for one year.

Graham took top honors in the radio section of the contest and placed high in the other classes.

Close behind Graham was the 1948 winner, J. I. Swedberg, Redwood county agent, who was judged to have the best visual entries and the best column with his *"Rambling with Swedberg."*

The women were not outshone by any means in the contest. Mrs. Doris Wyman, Waseca county home agent, won top honors in the press section, placing high with her two week's output and her column.

The purpose of the contest, according to Harold B. Swanson, extension editor, was two-fold. First, it was to stimulate interest in closer cooperation between agents and newspaper and radio stations. More important though, it offered a clearing house for information ideas between agents.

★

N. J. Sets Tree Planting Record

New Jersey 4-H club members planted a record number of 34,845 forest tree seedlings last year. Two hundred and seventy-six boys and girls from 10 counties carried out the planting projects. In 1948, 45 club members planted 11,176 trees.

Four-H boys and girls plant the small forest tree seedlings on land not suitable for other farm or garden crops. The seedlings are later harvested for Christmas trees, posts, pulpwood and sawtimber. Some members will sell Christmas trees six to eight years after planting.

The forest tree seedlings for 4-H use were secured from private forest nurseries, soil conservation districts and nurseries operated by the Department of Conservation.

★

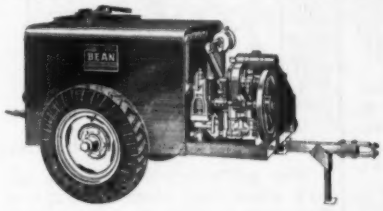
"Ag" Leaders Can Help

The American Society of Agricultural Engineers' committee on farm safety met in Chicago, December 20, 1949, and requested attention be called to some unsafe conditions common to home-made equipment and equipment manufactured by small local companies.

The committee urges that state specialists in safety and agricultural engineering, and county extension workers, be alert for these hazards and do anything possible to have them corrected at the source.

Exposed chains, sprockets, gears, pulleys, belts and shafts are among the hazards. If local manufacturers build and sell equipment without power take-off shields, it is suggested that they be urged to provide standard safety devices as part of their equipment.

Specifications and plans for power take-off shields are available from Raymond Olney, secretary, American Society of Agricultural Engineers, St. Joseph, Mich.



John BEAN SPRAYERS
Do All Farm Spraying Jobs

John Bean Model 06 has a capacity up to 7 gallons per minute at pressures to 400 lbs. It has the pressure and output necessary for spraying livestock, fighting corn borer, cleaning poultry houses and providing stand-by fire protection.

The selection of a John Bean sprayer provides the farmers with a many-purpose farm machine that will soon pay for itself. John Bean sprayers give better crop protection that results in better crops; time is saved, labor costs cut and many farm chores are done quicker and easier.

John BEAN SPRAYERS BUILD PROFITS AND CUT COSTS

Better crops at lower cost result from the selection of John Bean sprayers—the sprayers that do ALL because they have the complete range of pressures and the ability to handle all types of spray materials—including whitewash. The farmer is not limited to just a few spray jobs, as with equipment of limited capacity, but gets all the benefits of modern spray methods with John Bean. Write for free Farm Spray Guide and big Free Farm Sprayer Catalog.

John Bean ALL CROP spray booms and other accessories help get better protection for better crops. Write for big, free John Bean Farm Sprayer Catalog today; it tells how costs can be cut and profits increased.

For WEED CONTROL, John Bean has developed an efficient tractor-mounted sprayer that gives you fast, thorough coverage in small grains and pasture fields. Moderate cost and rugged construction make this sprayer an outstanding value.

JOHN fmc BEAN
Lansing 4 Michigan
DIVISION OF FOOD MACHINERY AND CHEMICAL CORPORATION

Planning the . . .

Educational Slide Sequence

By R. W. BROWN

"AG" LEADERS are extensive users of colored slides. This "how-to-do-it" feature tells how slides can be produced to do a more efficient teaching job.—Editor

● THE USEFULNESS, economy, and versatility of photographic slides as teaching aids is such that, today, they might well be classed as one of the seven wonders of education.

In all types of visual education, and in many other fields, slides have been used with striking success. In fact, their usefulness is just beginning to be explored.

Planning is necessary to make certain that the slide sequence will do the job it is intended to do. It is required to clarify the problem and indicate the answer.

Planning formal slide sequences is a four-part undertaking. The points to be remembered are these:

1. *Decide the main purpose* of the sequence—is it to tell, sell, or explain, and what? It is wise to be as specific as possible on this point, for unless the basic concept of the sequence as a whole is given sound consideration the story told by the slides may be faulty.

2. *Determine the audience* to which the slides will be shown as well as their attitude and experience level. This is important because, while you can speak to technically trained personnel about technical matters, you will only confuse a housewife. Plan your illustrations, commentary, and general story so that it will hit the audience in which you are principally interested.

3. *Plan the character* of the sequence and presentation, after taking the purpose and audience of the slide sequence into consideration. Is it to be humorous, sober, breezy, informative? Is it to shock the viewer into action? Is it to start out with a bang to catch and hold attention?

4. *Outline the story* or message. When outlining and making slide sequence of the "how-to-do-it" type, use a "three times over" technique to impress facts on the viewers' minds. Show the subject once from the viewpoint of an observer as the process is performed correctly. Then show it a second time from the same viewpoint as it is done improperly —so that the audience will be aware of the common mistakes which may be made. Finally, review the process a third time with the camera adopting a "first person" viewpoint. On this occasion, show the action correctly—just as it would appear if the audience were doing the job in person.

With general informational slide sequences the story outline should follow good story-telling form. The purpose, the audience, and the character of the picture or presentation will determine to a large degree the manner in which the standard slide sequence of this type is approached and handled.

ILLUS. NO. 12 JOB NO. 59

Illustration Description

Long shot of white country church (suggest Penfield Rd.).

Use Wratten G Filter for darkened sky.

Clouds not necessary.

Copy Summary

For effective pictures of white or light buildings, try shooting them through a yellow or orange filter. A Wratten G Filter was used here to contrast the white church and steeple against the darkened sky.

Job No. 59 Ill. No. 12 B and W Kodachrome ✓

Camera Work	Kodachrome to KP Proc. Out	In	Storyboard Print	Art Work	Pos. for Master Neg.	Quantity Run	Bind
12/1/48	12/2	12/4				6	2

Follow Production Steps

At this point take the following production steps:

1. *Translate words into picture ideas.* This can be done most easily by making a rough sketch of the picture on a small white card together with a brief description of what will be said in connection with each picture. These cards will enable the teacher and the photographer to plan the layout and composition of the various pictures in the sequence for the most effective results. They will also enable the photographer to plan a sequence of long shots, medium shots, and close-ups, varied as necessary for best effect.

2. *Plan the shooting schedule.* Group similar subjects to save time. This is an excellent economy practice where the budget must be watched closely. It is also good general practice in the production of any slide sequence.

3. *Shoot the picture.* The agricultural leader should make every effort to emphasize the important points and eliminate irrelevant details. Watch backgrounds, foregrounds, and surroundings in all sets to make certain nothing incidental distracts from the principal elements of the picture.

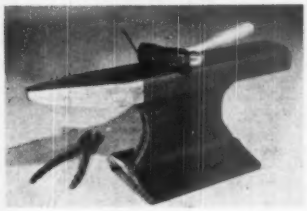
4. Finally, *"talk" the pictures*—and thus develop the commentary. If the pictures are to be shown with recorded commentary, the commentary should be checked and rechecked—presented and re-presented—to individuals and groups

as tests before final recording takes place. If it is to be delivered informally by an individual, the speaker should be encouraged to record his speech on a magnetic recorder—or some other recording device—and encouraged to practice the delivery until he has his talk down pat. Constant practice with a recorder is the best possible means of grooming speech and producing a commentary which is direct, forceful, and to the point.

Advance planning is not as critical with slides used to show individual products or samples as it is with general and instructional sequences. Slides which show individual items are usually employed mainly to assist in the description of these articles rather than to present a continuous story. Sufficient pictures of each item should be taken from various angles, however, to describe the items completely.

In other words, no matter how simple or how extensive your prospective slide sequence may be, advance planning has a tremendous influence on the resulting product. Such planning should be practiced and put into effect whenever and wherever possible.

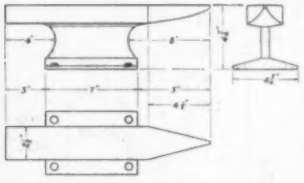
Small Anvil



Here's an anvil you can make for a few cents from a short piece of scrap rail. The anvil shown here was cut from a piece of 90-pound rail in about 15 minutes.

After shaping the anvil with your oxy-acetylene cutting blowpipe, drill four holes in the base for attaching it to a solid support. If you don't have a drill, you can pierce the holes with your blowpipe.

The anvil shown here weighs 18¼ pounds and will be satisfactory for most light work. If a heavier-duty anvil is desired, simply use heavier rail and change dimensions to suit your needs. If a regular rounded horn is preferred to the flat point shown here, it can be roughed out with the blowpipe, then ground down. (Photo courtesy the Linde Air Products Co.)



Planet Jr.

Planet Jr. Can Help You!

The new Model B-8 with 2½ H. P. engine

When you present farmers with facts on Planet Jr. you're certain to help them in agricultural planning.

When you talk about Planet Jr.'s eighty years of accumulated manufacturing knowledge, you can be certain you are talking about something more than experience in the mere assembly of a machine. It is Planet Jr.'s experience in design of equipment that gives a farmer what he needs; construction that assures a long period of useful operation; and a service policy that will help whenever necessary, even after years of use.

The Planet Jr. line includes Tractors, Seeders, Fertilizer Distributors, Cultivators and a wide variety of "Planetized" Tillage Steels. We shall be glad to send you all Planet Jr. data, on request.

S. L. ALLEN & CO., Inc., 3475 N. Fifth Street, Philadelphia 40, Pa.

LIVESTOCK PICTURES IN *Natural Colors*

Price 15 cents each, $1 for ten. Complete set of 18, $1.80.
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We have color pictures, printed on 8 x 11 inch stock:

1. Brown Swiss Cow
2. Jersey Bull and Cow
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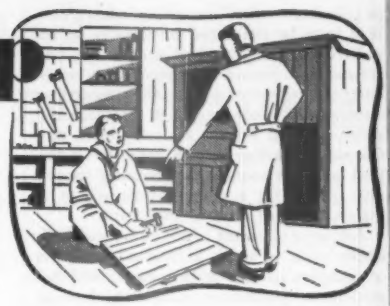
7. Berkshire Sow
8. Hampshire Ram
9. Columbia Ram
10. Angus Bull
11. Hereford Bull
12. Polled Hereford Bull
13. Shorthorn Bull
14. Shorthorn Cow
15. Milking Shorthorn Cow
16. Percheron Horse
17. Milking Shorthorn Bull
18. Hereford Cow

Better Farming Methods Mount Morris, Ill.

Teacher's Farm Shop



How to Plan Long-Time Financial Needs For Vo-Ag Facilities

By T. J. WAKEMAN
Teacher Trainer in Farm Mechanics
Agricultural Engineering Department
Virginia Polytechnic Institute

● THIS IS THE time of year most school officials plan the school budget for the coming session.

It would seem advisable for us to formulate a long-time plan to cover our needs for the next five years then present it to our school officials and let them know of our overall plans, rather than make requests in a "piece meal" fashion. School officials, as a rule, resent being called on every time a teacher wants a box of manila folders or a hack saw blade.

A long-time plan would also demonstrate to the school officials and school patrons, the teacher's ability and vision in planning. This plan could be used as an illustration when all day boys, young farmers, and adults are taught to plan their farm finances. Many successful teachers have representatives of their classes, community organizations, and school governing body to assist them in formulating such a plan.

In some communities teachers are prone to do nothing because of a likelihood of the school being moved or centralized. In the following plan, everything except the building and electrical services easily can be moved.

The following plan developed by the vo-ag department at Atwater, Va., is suggestive although not inclusive. The figures and sequence of events should serve only as a guide to assist the teacher. In this situation an office addition was needed more than a shop addition. Other situations may be different.

Needs for Atwater Vo-Ag Department 1949-1954

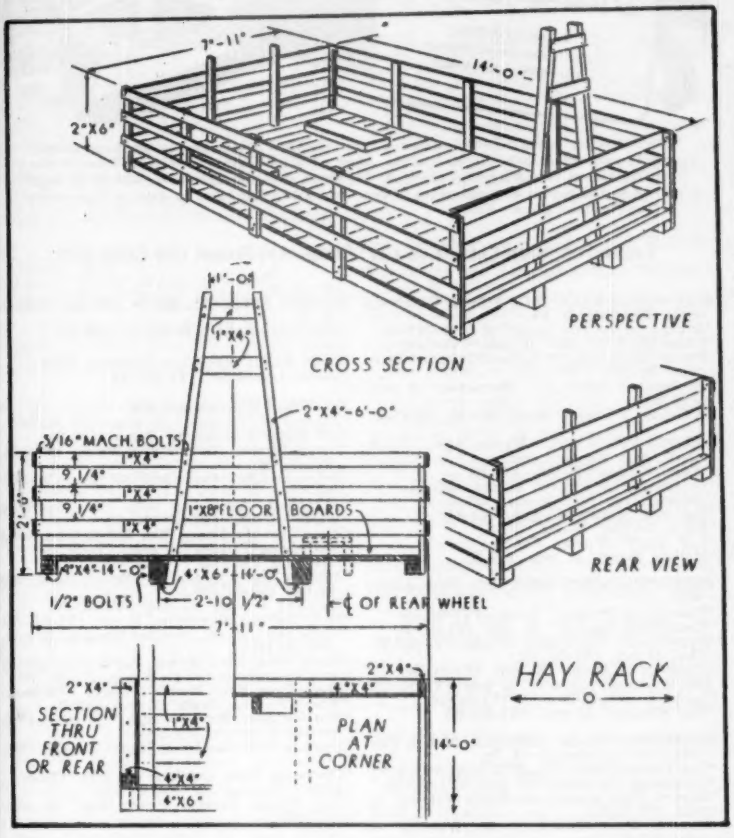
Equipment		1949–50	1950–51	1951–52	1952–53	1953–54
Classroom, Office, Shop and Lavatory						
Wiring and fixtures						
a. for light	$ 100–$ 500		$ 300			
b. for power	100– 1200	$ 300				
Paint	.01 per sq. ft.	80	80	$ 20	$ 50	$ 50
Maintenance		250	250	250	300	350
Supplies		400	400	400	450	500
Classroom						
Extension	1500– 4000	1500				
Tables	20 each	120				
Chairs	6 each	60				
Record book cabinet	15	15				
Bookcase	60 each		60			
Heater	150	150				
Magazine files	45		45			
Opaque projector	139	x				
S.V.E. double frame slide projector	90	x				
Bulletin board	8					
Blackout shades	80	x				
Projection screen	40	x				
Office						
Extension	1100		1100			
Heater	100	100				
Desks	50 each		50			
Chairs	25	25			15	
Four drawer files	60 each					60
Bulletin files	30	30				
Visual aids storage	50	50				
Duplicating machine	180		180			
Typewriter	135	135				
Lavatory	200	x				
Facilities	130	x				
Shop						
Extension	2000– 8000	x		5800		
Heater	400		400			
Enlarge entrance door	200	200				
Wall benches	10 each	60				
Tool cabinets	5 each	50				
Sink—2′x4′ with fountain	30	x				
Bookcase	6	x				
Supply cabinet 4x8 unit	35 each	35				
Welding booth	30	x				
Welding table	10 each	20				
Lumber storage	40	x				
Tool room	60	x				
Equipment						
Hand tools	300	20			100	
Grinders—1750 rpm	50 each	100	100			
12″ Arbor saw	800	x				
17″ Drill Press with slow speed	300	x				
Acetylene welder	140	x				
Electric welder 250 amps	235	x				
Heavy duty grinder 1 h.p. 1500 rpm	140		140			
Forge Buffalo 243E	238	x				
Planer 18″	1430				1430	
Jointer 6″	156	x				
Power hacksaw 6″	325		325			
Tractor maintenance unit	400	400	x			
14″ Drill press	205		205			
16″ Radial Saw, 5 h.p.	725				725	
Portable drill, ⅝ H.D.	80		80			
Portable sander	150				150	
Portable grinder 6″	125		125			
Wood lathe 14″	400					400
Band saw 20″	400				400	
Metal lathe 13″	1425					1425
12″ electric clock	12	12				
Majestic drill sharpener	11	11				

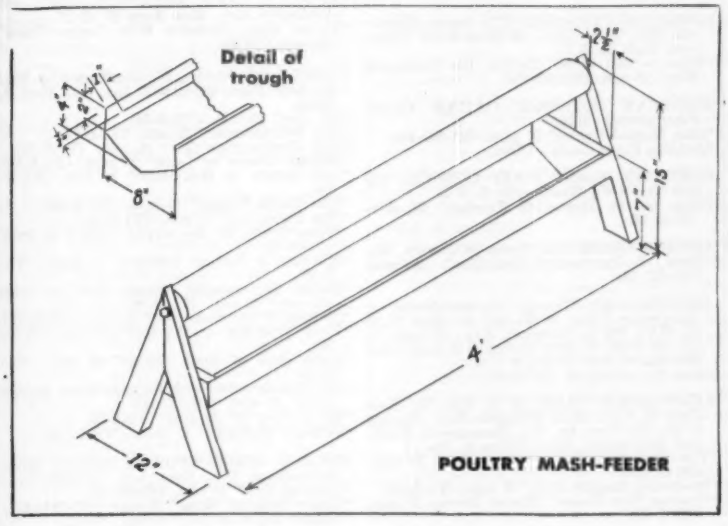
Coming Next Month

"Corn Culture," a business-sponsored educational insert, will be featured in the April issue of Better Farming Methods.

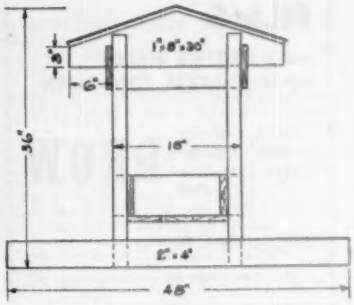
This insert is sponsored by the DeKalb Agricultural Ass'n, Inc., DeKalb, Ill.

Handy Building Plans



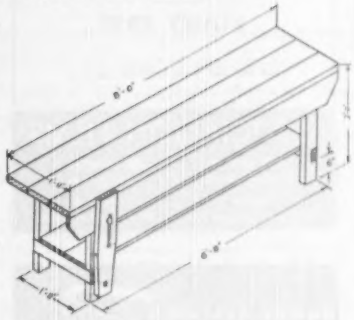


Covered Salt Box for Sheep

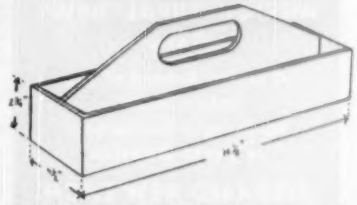


The plan of this covered salt box is used through the courtesy of the Agricultural Engineering Dept., Michigan State College.

Farm Work Bench

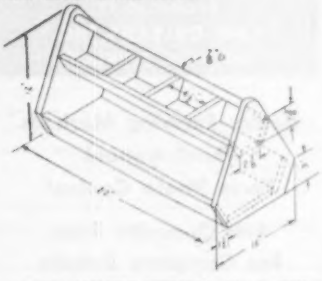


A sketch showing construction of a good farm shop work bench. (Diagram Courtesy Ag Engineering Dept., Ohio State Univ.)



THIS MILK TESTING KIT may be made from one-fourth inch lumber.

Nail and Tool Box



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RURAL AMERICA Review

A 10 Min., 16 MM AGRICULTURAL NEWS REEL

A Living Record of the Latest News, Ideas, and Techniques in Rural America

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KNOXVILLE, TENNESSEE

Better Farming Methods Third Annual Farm Photo Contest

See Opposite Page For Complete Details

The following commercially-sponsored films are available to vo-ag teachers, county agents and other agricultural leaders. Most of these films are entirely free; a few require return transportation charges. Inquiries and correspondence should be sent direct to the names and addresses shown. Order films at least 10 days to two weeks before you need them.—Editor.

Legend: Motion (1); Slide (2); Strip (3); Sound (S) Color (C).

S. L. ALLEN & CO., INC., Fifth & Glenwood Ave., Philadelphia, Pa.
"A Chip off the Old Block" 20 min. (V1-16)
"Grow What You Eat" 20 min. (V2-C-16)
"Power Equipment for General Purpose Tractors" 20 min. (V2-C-16)
"Mechanized Power Aids Manpower" 20 min. (V2-16)
"A Garden Tractor at Work" 20 min. (V2-C-16)

ALLIED MILLS, INC., Wayne Agric. Youth Dept., Fort Wayne 1, Ind.
"Waste Weasels" 27 min. (V3-S)
"Building Profit Pullets" 28 min. (V3-S)
"Making Cows Pay" 24 min. (V3-S)
"Full Egg Baskets" 27 min. (V3-S)
"It's in the Bag" 30 min. (V3-S)
"Calf Craft" 30 min. (V3-S)
"Making Bacon" 28 min. (V3-S)

ALLIS-CHALMERS MFG. CO., Milwaukee, Wis.
"Planning to Prosper" 22 min. (V1-SC-16)
"Tomorrow's Leaders" 15 min. (V1-SC-16)
"Sugar in the Everglades" 22 min. (V1-SC-16)
"Hay" 22 min. (V1-SC-16)
"Highway to Alaska" 22 min. (V1-SC-16)
"Pan American Highway" 45 min. (V1-SC-16)
"Looking Ahead" 22 min. (V1-SC-16)
"The Winners" 22 min. (V1-SC-16)

ALUMINUM CO. OF AMERICA, Motion Picture Dept., Pittsburgh 19, Pa.
"The Farmer Takes a Roof" 15 min. (V1-S-16)
"Unfinished Rainbows" 37 min. (V1-SC-16)
"How to Weld Aluminum—Torch Welding" 17 min. (V1-S-16)
"How to Weld Aluminum—Arc Welding" 10 min. (V1-S-16)

AMERICAN CYANAMID CO., Agric. Chemicals Div., Adv. Dept., 30 Rockefeller Plaza, New York 20, N.Y.
"Tobacco Bed Weed Control the Cyanamid Way" 18 min. (V1-SC-16)

AMERICAN GUERNSEY CATTLE CLUB, Peterborough, N.H.
"Man Made Miracles" 30 min. (V1-SC-16)
"Judging Dairy Cattle" (V3-C)

AMERICAN PLANT FOOD COUNCIL, 910 17th St., N.W., Washington 6, D.C.
"First in the Hearts of Farmers" 24 min. (V1-S-16)

ANCHOR SERUM CO., South St. Joseph, Mo.
"Story of Vaccination Simplified" 36 min. (V1-SC-16)

ARMOUR & CO., Chicago, Ill., distributed by Association Films, 35 W. 45th St., New York 19, N.Y.; 206 S. Michigan Ave., Chicago 3, Ill.; 351 Turk St., San Francisco 2, Calif.; and 3012 Maple Ave., Dallas 4, Tex.
"Meat for America" (V1-S-16)

ASSOCIATION FILMS, 35 W. 45th St., New York 19, N.Y.; 206 S. Michigan Ave., Chicago 3, Ill.; 351 Turk St., San Francisco 2, Calif.; and 3012 Maple Ave., Dallas 4, Tex.
"The King Who Came to Breakfast" 17 min. (V1-SC-16)
"Producing Quality Milk" 27 min. (V1-S-16)
"Shortest Way Home" (Travel Movie) 33 min. (V1-S-16)

BABSON BROS. CO., 2843 W. 19th St., Chicago 23, Ill.
"Sentinels of Milk" 20 min. (V1-S-16)

JOHN BEAN MFG. CO., Lansing, Mich.
"Better Livestock" (V1-SC-16)

J. I. CASE CO., Racine, Wis.
"Pageant of Progress" 20 min. (V1-SC-16)
"5000 Years in 50 Scenes" 20 min. (V3-S)
"Level Farming on Sloping Fields" 10 min. (V1-SC-16)
"Soil and Life" (terracing) 10 min. (V1-SC-16)
"Broadbase Terracing with the One-Way Plow" 10 min. (V1-SC-16)
"Your Own Moldboard Plan Will Build a Good Broadbase Terrace" 10 min. (V1-SC-16)
"Hydraulic Controls" (V1-SC-16)
"Modern Farm Machines Bring Back the Range" (V1-SC-16)
"Building a Pond" 10 min. (V1-SC-16)
"High Yielding Harvesting" 10 min. (V1-SC-16)
"Strips and Curves" (dryland farming) 20 min. (V1-SC-16)
"More Food from Fewer Acres" (irrigation and intensive farming) 20 min. (V1-SC-16)
"More From Your Mower" 15 min. (V3-S)
"Where Furrows Begin" 30 min. (V3-S)
"Starting New Tractors Right" 15 min. (V3-speaker's manual available)
"Starting New Combines Right" 30 min. (V3-S)
"Operating Your Combine" 15 min. (V3-S)
"Field Chopping" 15 min. (V3-S)
"The Almost Careful Hired Man" 12 min. (V3-SC)

COPPER & BRASS RESEARCH ASS'N., 420 Lexington Ave., New York 17, N. Y.
"Better Water Systems With Copper Tube" 14-min. (V3-S)

DEERE & CO., Moline, Ill., distributed by Reid H. Ray Film Industries, Inc., St. Paul 1, Minn.
"Dr. Jim" 50 min. (V1-S-16)
"The Windjammer" 52 min. (V1-S-16)
"The Blacksmith's Gift" 31 min. (V1-S-16)
"Melody Comes to Town" 50 min. (V1-S-16)
"Joel Gentry in Hollywood" 39 min. (V1-S-16)
"The Tuttle Tugger" 35 min. (V1-S-16)
"The Clean Cut" 11 min. (V1-S-16)
"More Grain in the Grain Tank" 13 min. (V1-S-16)
"Hitching & Belting Pointers" 11 min. (V1-S-16)
"Better Performance, Longer Life in Corn Planters" 13 min. (V1-S-16)
"Menace of the Corn Belt" 11 min. (V1-S-16)
"Keep Your Eye on the Soil" 15 min. (V1-S-16)
"Farm Care of Your Tractor" 36 min. (V1-S-16)
"Soil Conservation with Regular Farm Equipment" 20 min. (V1-SC-16)
"Early Does It" 22 min. (V1-S-16)
"Greener Pastures" 15 min. (V1-SC-16)

DEKALB AGRICULTURAL ASSOC., INC., Educational Div., Dept. 1-B, DeKalb, Ill.
"Acres of Gold" 16 min. (V1-SC-16)
"Under Summer Skies" 16 min. (V1-SC-16)
"Hunger Signs in Corn" 8 min. (V3-S)

When writing advertisers please mention *Better Farming Methods*

Corn Colors and Color Mixtures" 8 min. (V3-S)
Sexual Reproduction in Plants" 15 min. (V3-S)
A recording can be furnished where a sound slidefilm projector is available or, if not, a printed syllabus can be provided.

OBECKMUN CO., P.O. Box 6417, Cleveland 1, O.
A New Method of Tobacco Plant Culture" 27 min. (V1-C-16)

DOUGLAS FIR PLYWOOD ASSOC., 1232 Shoreham Bldg., Washington 5, D.C.; 1707 Daily News Bldg., Chicago 6, Ill.; Room 301, Tacoma Bldg., Tacoma 2, Wash.
How to Finish Plywood" 22 min. (V1-SC-16)
The Plywood Fleet" 35 min. (V1-SC-16)
Prefabrication with Plywood" 32 min. (V1-SC-16)
Miracle in Wood" 35 min. (V1-SC-16)
Farm Uses for Plywood" 30 min. (V1-SC-16)

DOW CHEMICAL CO., Advertising Dept., Midland, Mich.
Death to Weeds" 20 min. (V1-SC-16)
Chemical Weed Control" 25 min. (V1-SC-16)

E. I. DUPONT DE NEMOURS & CO., INC., Agric. Promotion Div., 2539 Nemours Bldg., Wilmington 98, Del.
Lost Harvest" 20 min. (V1-SC-16)

ETHYL CORP., Chrysler Bldg., New York 17, N.Y.
At Your Command" 22 min. (V1-S-16)
Masters of the Soil" 23 min. (V1-S-16)
This is Our Land" 26 min. (V1-S-16)
Magic in Agriculture" 28 min. (V1-S-16)
Preventive Maintenance Pays" 21 min. (V1-S-35)
Old MacDonald Had a Farm" 28 min. (V1-S-16)
Pattern for Progress" 20 min. (V1-SC-16)

FUNK BROS. SEED CO., Bloomington, Ill.
The Great Story of Corn" 30 min. (V1-SC-16)

FOX RIVER TRACTOR CO., Appleton, Wis.
The Forage Master" 33 min. (V1-SC-16)

GENERAL ELECTRIC CO., Farm Industry Div., Schenectady 5, N.Y.
Frozen Foods" 40 min. (V1-SC-16)
The Inside of Arc Welding" (V1-SC-16)
Part I, Fundamentals (10 min.)
Part II, Alternating-Current Welding (10 min.)
Principles of Electricity" 20 min. (V1-SC-16)

GENERAL MOTORS CORP., Public Relations Dept., Detroit 2, Mich., or from college visual libraries.
Safety, Our Number One Crop" (V1-S-16)

B. F. GOODRICH CO., distributed by Castle Films, Div. of United World Films, Inc., 445 Park Ave., New York, N.Y.
Rubber Lends a Hand" 28 min. (V1-SC-16)

HY-LINE POULTRY FARMS, 115 11th St., Des Moines 9, Ia.
Improving Chickens by Crossing Inbred Lines"

INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago, Ill.
Fresh From the Garden" 7 min. (V1-SC-16)
Jungle Yachts in the Belgian Congo" 16 min. (V1-S-16)
Helpful Henry" 21 min. (V1-S-16)
Farm Inconveniences" 10 min. (V1-S-16)
My Model Farm" 11 min. (V1-S-16)
Yesterday and Today" 10 min. (V1-S-16)
The Story of Binder Twine" 12 min (V1-S-16)
Save Those Tools" 10 min. (V1-S-16)
One Man Harvesting" 21 min. (V1-SC-16)
Permanent Agriculture" 30 min. (V1-S-16)
Under Western Skies" 28 min. (V1-SC-16)
Party Line" 16 min. (V1-S-16)
Romance of the Reaper" 30 min. (V1-S-16)
Modern Education in the Beaverton Consolidated Schools" 13 min. (V1-S-16)
Soybeans for Farm and Industry" 10 min. (V1-S-16)
It's More Than Hay" 23 min. (V1-SC-16)
Salute to Agriculture" 13 min. (V1-SC-16)
County Fair" 22 min. (V1-SC-16)

KEYSTONE STEEL & WIRE CO., distributed by C. L. Venard, 702 S. Adams St., Peoria, Ill.
Tom—Dick and Harry" 50 min. (V1-S-16)
Hidden Treasures" 60 min. (V1-S-16)
A Trip to a Modern Steel and Wire Mill" 24 min. (V1-S-16)
Hoosier Hot Shots" 13 min. (V1-S-16)
Box 12—Route 2" 15 min. (V1-S-16)

LEDERLE LABORATORIES Div., Film Library, American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N.Y.
Newcastle Disease" 15 min. (V1-C-16)
Modern Control of Poultry Diseases" 35 min. (V1-SC-16)
Sulmet Sulfamethazine in the Treatment of Livestock Diseases" 25 min. (V1-SC-16)

LINCOLN ELECTRIC CO., 12818 Coit Rd., Cleveland 1, O.
Welding Comes to the Farm" 24 min. (V1-S-16)

THE JAMES F. LINCOLN ARC WELDING FOUNDATION, Cleveland, O.
Equipment and Fundamentals of Welding," (V-3) 38 frames.
Learning to Run a Blade" (V-3) 42 frames.
How to Make Welds in All Positions" (V-3) 79 frames.
The above slide films may be secured on a loan basis or may be purchased at $3 per set. Postage prepaid in U.S.A. $3.50 elsewhere.

MARQUETTE MFG. CO., INC., Dept. J-23, Minneapolis 14, Minn.
Marquette Story" 33 min. (V1-SC-16)

MASSEY-HARRIS CO., Racine, Wis.
A Romance of Two Hemispheres" 35 min. (V1-SC-16)
Into Tomorrow" 27 min. (V1-SC-16)
Two Tickets to Progress" 24 min. (V1-SC-16)

MINNEAPOLIS-MOLINE POWER IMPLEMENT CO., Minneapolis, Minn., distributed by Elliott Film Co., 1110 Nicollet Ave., Minneapolis, Minn.
Guernsey at War" 34 min. (V1-SC-16)
Thunderheads Over the Pacific" 45 min. (V1-SC-16)
A Saga of the Soil" 45 min. (V1-SC-16)
This Heritage of Ours" 45 min. (V1-SC-16)
Pioneers of Progress" 45 min. (V1-SC-16)
Reasons for the Seasons" 45 min. (V1-SC-16)

NEW-IDEA DIV., Avco Mfg. Co., Coldwater, O.
The Legacy" 27 min. (V1-SC-16)
4-H Headlines" (V1-SC-16)

PENNSYLVANIA SALT MFG. CO., 1000 Widener Bldg., Philadelphia 7, Pa.
The Problem of Bacteria in Milk" (V1-SC-16)

PHILLIPS PETROLEUM CO., Bartlesville, Okla.
The Other Side of the Fence" 24 min. (V1-SC-16)

SEARS ROEBUCK FOUNDATION, distributed by C. L. Venard, 702 S. Adams St., Peoria, Ill.
Southern Sunrise" 20 min. (V1-SC-16)
National Farm Oddities" 20 min. (V1-S-16)
National Farm Newsreel" 17 min. (V1-S-16)
Time's A-Wastin'" 27 min. (V1-S-16)
Stitch in Time" 26 min. (V1-S-16)
Under the 4-H Flag" 44 min. (V1-S-16)
The Green Hand" 44 min. (V1-S-16)
An Ounce of Prevention" 25 min. (V1-SC-16)
Where the Road Turns Right" 38 min. (V1-S-16)
The Golden Egg" 22 min. (V1-S-16)

SINCLAIR REFINING CO., 10 W. 51st St., New York 20, N.Y.; 2540 W. Cermak Rd., Chicago 8, Ill.; P.O. Box 1710, Atlanta, Ga.; 9th and Grand Ave., Kansas City 13, Mo.; and Fair Bldg., Ft. Worth, Tex.
Over the Rainbow" 35 min. (V1-S-16)
Farm Work Simplification" 20 min. (V1-S-16)
Heaven with a Fence Around It" 25 min. (V1-S-16)
Miracle in Paradise Valley" 35 min. (V1-S-16)

SISALKRAFT CORP., 205 W. Wacker Drive, Chicago 6, Ill.
Money in the Bank" 15 min. (V1-S-16)

SUNBEAM CORP., Hardware-Machinery Div., 5600 Roosevelt Rd., Chicago 50, Ill.
Sheep Shearing" (V1-S-16)
Harvesting the Farm Flock Wool Crop" (V1-16)

SWIFT & CO., Agricultural Research Dept., Chicago 9, Ill.
By-Products" 10 min. (V1-SC-16)
Livestock and Meat" 49 min. (V1-SC-16)
A Nation's Meat" 30 min. (V1-SC-16)
Meat Buying Customs" 10 min. (V1-SC-16)
Cows and Chickens—USA" 25 min. (V1-SC-16)

TEXAS CO., Public Relations Dept., 135 E. 42nd St., New York 17, N.Y.
Chicken of Tomorrow" 20 min. (V1-SC-16)
It's News Because It's New" 24 min. (V1-SC-16)
Your Apple Orchard" 24 min. (V1-SC-16)
Deep Horizons" 45 min. (V1-SC-16)
Masters of Molecules" 25 min. (V1-SC-16)
Tanker" 25 min. (V1-SC-16)
A New Frontier" 25 min. (V1-SC-16)

Farm Photo Contest for "Ag" Leaders

Here are the rules and cash prizes for the third FARM PHOTO CONTEST sponsored by Better Farming Methods.

Cash prizes will be awarded in the following classes:

CLASS 1—For County Agents and County Club Agents—First prize $15; second prize $10; third prize $5; fourth prize $2.50; fifth prize $2.50.

CLASS 2—For Vo-Ag Teachers—First prize $15; second prize $10; third prize $5; fourth prize $2.50; fifth prize $2.50.

CLASS 3—For Extension Specialists, Soil Conservationists and other Agricultural Leaders—First prize $15; second prize $10; third prize $5; fourth prize $2.50; fifth prize $2.50.

The best picture selected from the three different classifications will be considered for possible use on one of the future covers of Better Farming Methods.

RULES: 1. Photo should show farm activity, sponsored by extension workers, vo-ag teachers or soil conservationists.

2. Print size: 8" x 10", unmounted, black and white.

3. Contestants may submit any number of entries.

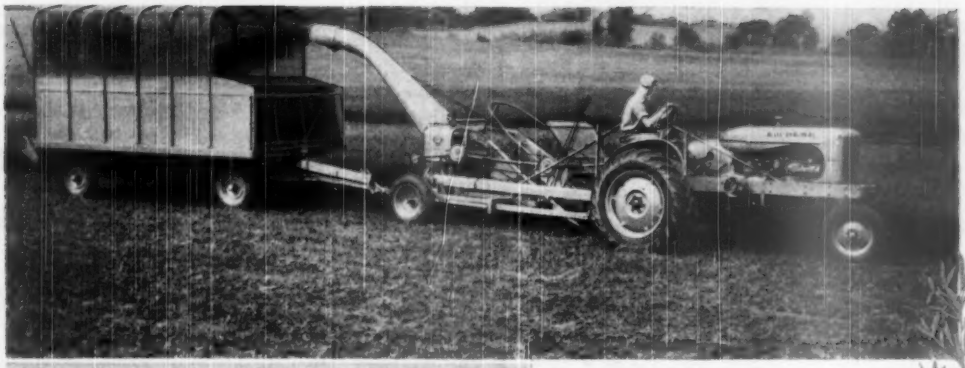
4. Attach name, address and contest classification to each photo.

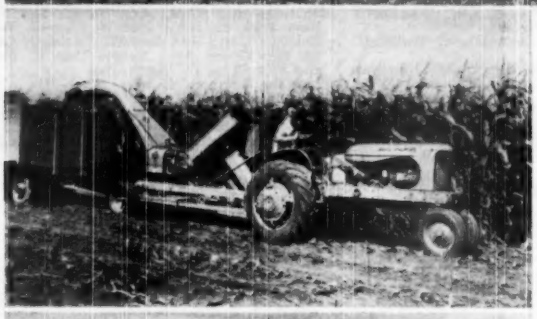
5. Entries will be judged by the editors of Better Farming Methods and their decision will be final. Duplicate prizes will be awarded in case of ties.

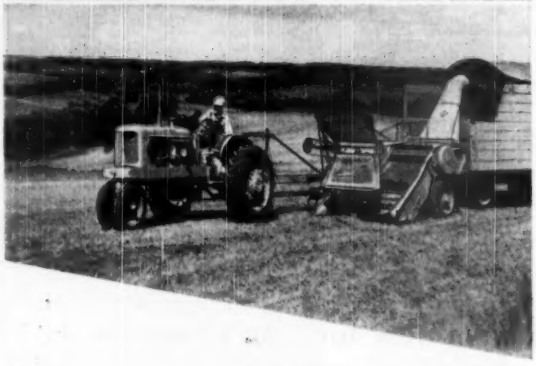
6. Unsuccessful entries will be returned only if accompanied by addressed and stamped envelope.

7. Entries must be post-marked not later than midnight, August 21, 1950.

SEND ALL ENTRIES to Farm Photo Contest, Better Farming Methods, Mount Morris, Ill.

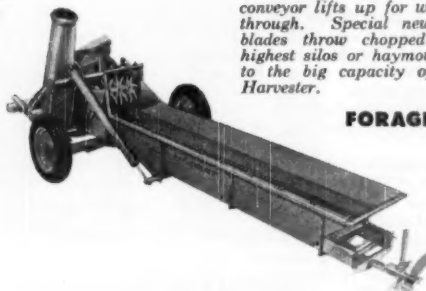






The Forage Blower's long 11½-ft. conveyor lifts up for wagon to drive through. Special new curved fan blades throw chopped forage into highest silos or haymows. Matched to the big capacity of the Forage Harvester.

FORAGE BLOWER



GREEN HARVEST

gives year 'round "pasture"

When the bloom is just right, when leaves are tender and protein is at its peak . . . that is when the farmer needs his *own* Forage Harvester.

He can make the best silage he has ever fed, whatever the weather and have the advantage of green feed the year 'round. Power handles the crop all the way. Heavy pitchfork labor is eliminated from start to finish. Even the spiral knives of the Forage Harvester's wide, easy-rolling cylinder are power-sharpened by a built-in sharpener.

The Allis-Chalmers power take-off Forage Harvester is actually three machines in one, priced for home ownership on the family farm. With three inexpensive attachments, it power harvests all forage crops, tall or short, green or dry:

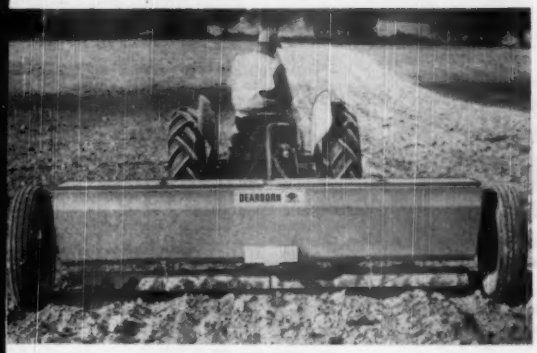
1. **Direct-cut attachment for grass silage, stubble, stalks.**
2. **Row-Crop attachment for corn, sorghums, tall crops.**
3. **Windrow pickup attachment for wilted or dry hay and straw.**

More livestock feed nutrients can now come from soil-building grass and legume hayland . . . at far lower cost. A home-owned Forage Harvester can be the most important harvesting machine on the farm. And back of it will be the skilled and conscientious service of an Allis-Chalmers dealer.

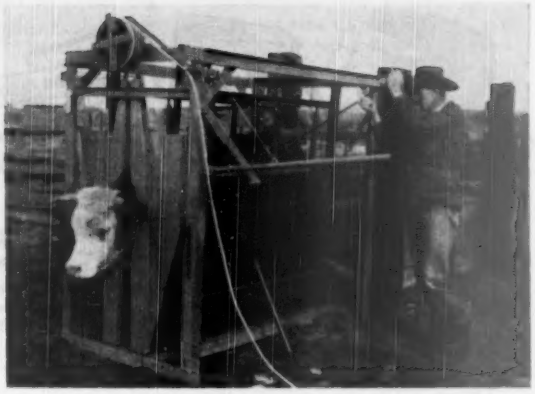
ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

FORAGE HARVESTER

When writing advertisers please mention *Better Farming Methods*



New Dearborn lime and fertilizer spreader. The spreader hopper has a capacity of about 1,000 to 1,250 pounds.

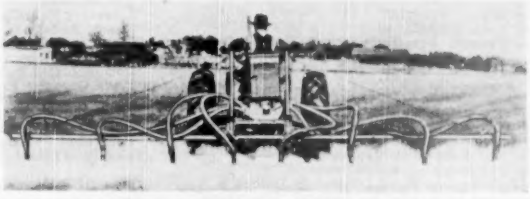


"One Man" Stock Squeeze Chute, manufactured by the Farnam Equipment Company, Phoenix, Ariz.

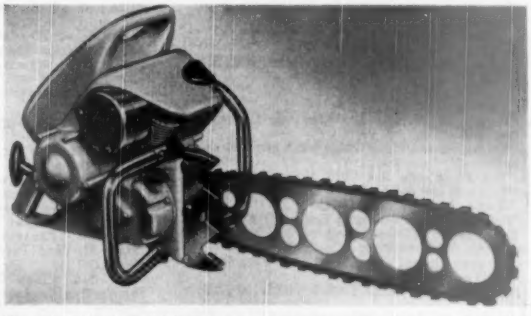
What's New In . . .

Farm Equipment

Here is timely information to keep busy agricultural leaders informed on the latest farm equipment developments.—Editor

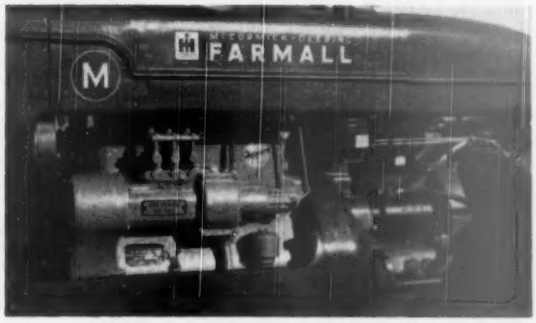


The new Dobbins 8-row power duster, designed for dusting row crops. May also be used for spreading fine mesh commercial fertilizer.



New McCulloch model 3-25 power chain saw. Complete saw, including blade and chain, weighs less than 25 pounds.

New type, one-way plow, designed and developed for Ford-Ferguson tractors and jeeps, by the Schafer Plow, Inc. The new plow is a lift-up type of all-welded construction, with 26-in. disc blades.



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FARM LEADERS should

Know the Answers!

☐ 1. What is the latest month in which baby chicks should be ordered?

☐ 2. What will culling do besides increase flock production averages?

☐ 3. How can layers that have laid heavily all winter be helped now?

☐ 4. Is this the time to plan a range program for the coming season and years following?

☐ 5. What should be done to improve shell quality during spring months?

☐ 6. What should be done now about a disease control program?

☐ 7. What is the cheapest and most valuable building any poultryman can own?

☐ 8. What are the qualities to be found in a good watering device?

☐ 9. What type of program will bring a profit for poultrymen in 1950?

☐ 10. What meetings should poultrymen attend this spring?

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Cost per Bushel	Weight per bushel—pounds				
	32	48	56	60	70
cents	cents	cents	cents	cents	cents
30	0.937	0.625	0.536	0.500	0.429
31	0.969	0.646	0.554	0.517	0.443
32	1.000	0.667	0.571	0.533	0.457
33	1.031	0.687	0.589	0.550	0.471
34	1.062	0.708	0.607	0.567	0.486
35	1.094	0.729	0.625	0.583	0.500
36	1.125	0.750	0.643	0.600	0.514
37	1.156	0.771	0.661	0.617	0.529
38	1.187	0.792	0.679	0.633	0.543
39	1.219	0.812	0.696	0.650	0.557
40	1.250	0.833	0.714	0.667	0.571
41	1.281	0.854	0.732	0.683	0.586
42	1.312	0.875	0.750	0.700	0.600
43	1.344	0.896	0.768	0.717	0.614
44	1.375	0.917	0.786	0.733	0.629
45	1.406	0.937	0.804	0.750	0.643
46	1.437	0.958	0.821	0.767	0.657
47	1.469	0.979	0.839	0.783	0.671
48	1.500	1.000	0.857	0.800	0.686
49	1.531	1.021	0.875	0.817	0.700
50	1.562	1.042	0.893	0.833	0.714
51	1.594	1.062	0.911	0.850	0.729
52	1.625	1.083	0.929	0.867	0.743
53	1.656	1.104	0.946	0.883	0.757
54	1.687	1.125	0.964	0.900	0.771
55	1.719	1.146	0.982	0.917	0.786
56	1.750	1.167	1.000	0.933	0.800
57	1.781	1.187	1.018	0.950	0.814
58	1.812	1.208	1.036	0.967	0.829
59	1.844	1.229	1.054	0.983	0.843
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69	2.156	1.437	1.232	1.150	0.986
70	2.187	1.458	1.250	1.167	1.000
71	2.219	1.479	1.268	1.183	1.014
72	2.250	1.500	1.286	1.200	1.029
73	2.281	1.521	1.304	1.217	1.043
74	2.312	1.542	1.321	1.233	1.057
75	2.344	1.562	1.339	1.250	1.071
76	2.375	1.583	1.357	1.267	1.086
77	2.406	1.604	1.375	1.283	1.100
78	2.437	1.625	1.393	1.300	1.114
79	2.469	1.646	1.411	1.317	1.129
80	2.500	1.667	1.429	1.333	1.143
81	2.531	1.687	1.446	1.350	1.157
82	2.562	1.708	1.464	1.367	1.171
83	2.594	1.729	1.482	1.383	1.186
84	2.625	1.750	1.500	1.400	1.200
85	2.656	1.771	1.518	1.417	1.214
86	2.687	1.792	1.536	1.433	1.229
87	2.719	1.812	1.554	1.450	1.243
88	2.750	1.833	1.571	1.467	1.257
89	2.781	1.854	1.589	1.483	1.271
90	2.812	1.875	1.607	1.500	1.286
91	2.844	1.896	1.625	1.517	1.300
92	2.875	1.917	1.643	1.533	1.314
93	2.906	1.937	1.661	1.550	1.329
94	2.937	1.958	1.679	1.567	1.343
95	2.969	1.979	1.696	1.583	1.357
96	3.000	2.000	1.714	1.600	1.371
97	3.031	2.021	1.732	1.617	1.386
98	3.062	2.042	1.750	1.633	1.400
99	3.094	2.062	1.768	1.650	1.414
100	3.125	2.083	1.786	1.667	1.429

(From "Feeding the Dairy Herd" Minnesota Extension Bulletin 218.)

Weight of Water

1 cubic inch.....03617 pounds
1 cubic foot.....62.5 pounds
1 cubic foot.....7.48052 U.S. gal.
1 U. S. gallon.....8.355 pounds

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—"Tips on Sheep Shearing"
—(Wall Chart) Self-Teaching Sunbeam Stewart Chart, showing the Australian or Western Method of shearing sheep.
SUNBEAM CORP.

—"Catalog of Dairy and Breeders' Supplies"
C. H. DANA CO.

—New Catalog of Hy-Line Chicks
—"How Hy-Line Chicks Are Bred"
HY-LINE POULTRY FARMS

—"How to Plan a School Workshop"
ROCKWELL MFG. CO.

—Sample copy of "Your Farm" magazine
YOUR FARM MAGAZINE

—"Information on the RCA 400 Sound Projector"
RADIO CORP. OF AMERICA

TOOLS

—"Farm Levels and Direction Booklet" (for use in terracing, irrigation, drainage, etc.)
BOSTROM-BRADY MFG. CO.

—"Vises" (showing different models for various types of work)
COLUMBIAN VISE & MFG. CO.

—"Stanley Steel Square Booklet"
—Tool Catalog, pocket-size (lists hand tools for farm shops and helpful tables and charts)
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WATER SYSTEMS

—"Self Priming Pumps for Farm and Irrigation"
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New One-Man Bagger

New, one-man bagger simplifies the troublesome job of shoveling grain into awkward bags, by holding them in an open, upright position and providing a wide mouth for easy handling by only one person. The bagger is manufactured by the Mitchell Corp.

★

"When you were in college what did you go in for?"
"Because it was raining."

Incubation Periods

While the period of incubation may vary a day or two because of conditions affecting temperatures, the following table given by the U. S. Department of Agriculture represents an average:

	Days
Hen	21
Pheasant	22-24
Duck	28
Muscovy Duck	33-35
Turkey	28
Peafowl	28
Guinea fowl	26-28
Ostrich	42
Goose	30
Pigeon	17

Approximate Weight of Different Cuts From Home Dressed Animals

The actual number of pounds will vary with the type and fatness of the animal but these figures may be used as a guide in figuring the number of pints of canned meat or frozen packages of different cuts of meat from different animals.

BEEF—A 750-pound beef would yield about 200 pounds in hindquarters and 220 pounds in forequarters or a total of 420 pounds.

Hindquarters about 60 percent tender cuts and 15 percent less tender cuts. 200 hindquarters will yield 120 pounds steaks and roasts, 35 pounds stew and ground meat.

Forequarters about 25 percent tender cuts and 60 percent less tender cuts. 220 pounds forequarter will yield 55 pounds steaks and roasts, 130 pounds pot roasts, stew and ground meat.

Bone, trim and fat about 10 percent of live weight or 75 pounds. 25 pounds liver, heart, brains, tongue, sweet breads, kidneys.

HOG—A 225-pound hog dressed out 175 pounds.

For curing—hams 70 pounds, shoulders 35 pounds, bacon and jowls 25 pounds and total of 90 pounds.

For Freezing or Canning—loins, ribs, sausage, 35 pounds; liver, heart, tongue, 5 pounds; bones, etc., for head cheese, 20 pounds.

LAMB—An 80-pound lamb dressed out 40 pounds.

Tender cuts—legs, chops and shoulders, 30 pounds.

Less Tender Cuts—Breast and stew meat, 5 pounds; bone, trim, fat, liver, tongue, heart, 5 pounds.

POULTRY—*Young chickens*—2 to 4 pounds live weight will yield 1½ pounds dressed and drawn.

Hens—4 to 8 pounds live weight will yield 2½ to 5 pounds dressed and drawn.

Turkeys—dress out about 75 percent. 10-20 pounds live weight will yield 7½-15 pounds dressed and drawn. (Adapted from Circular 709 USDA.)

WEED TRACTOR CHAINS *keep tractors rolling!*

● You can put your rubber-tired tractor to work sooner after rain—sometimes two or three days sooner—with WEED BULL or WEED SPIRAL GRIP TIRE CHAINS. They help you get work done when you want it done—and in less time. Tractors equipped with WEED tractor chains hold steady in mud, gumbo or snow. Right and left hand twist retards tightening-up. It's an easy one-man job to put the chains on or take them off and they need no adjustment. See or call your implement dealer and order WEED TRACTOR CHAINS now.

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Personal

New Officers of the National Association of Radio Farm Directors: (l-r) Roy Battles, president, Station WLW, Cincinnati, O.; Phil Alampi, vice president, Station WJZ, New York 20, N.Y.; Chris Mack, secretary-treasurer, Station WNAX, Yankton, S.D.

David C. Sprague, agricultural engineering department, Pennsylvania State College, has accepted appointment as agricultural engineering consultant for Libbey-Owens-Ford Glass Co., for the period of his sabbatical leave.

Wilbur R. Hesseltine fills the vacancy left by the death of former **Extension Dairyman William R. Walker,** of the Connecticut Extension Service.

John L. Gray succeeds **Robert W. Graeber** as extension forester at North Carolina State College. Graeber retired January 1, after serving as extension forester since 1925.

Robert R. Pinches, 4-H club agent, Hennepin county, Minn., is the new state rural youth agent for the agricultural extension service, succeeding **Kathleen Flom,** who was recently named assistant 4-H club leader in charge of rural youth.

County Agent Floyd Lower, Columbiana county, Ohio, was honored January 28, in recognition of his 25 years of outstanding service in Columbiana county.

J. Frank Stroud, soil scientist, SCS, Auburn, Ala., retired January 31. He had been with the Soil Conservation Service and the Soil Erosion Service since April 4, 1934. He had been engaged in soils work for more than 35 years. Stroud started in soil survey work with the State of Alabama on January 1, 1914.

The new county agent supervisor for Nebraska is **Ray Russell,** former Saunders county agricultural agent. Russell replaces **J. P. Ross,** who retired recently after serving 29 years with the Nebraska Agricultural Extension Service.

Dean D. Voskuil, assistant county agent, Maricopa county, Arizona, has received for the Maricopa county 4-H clubs, a copper plaque for the most oustanding 4-H safety program in Arizona last year.

Fred L. Bull, SCS district conservationist for Baltimore, Howard and Harford districts in Maryland, has been named extension soil conservationist at the University of Maryland. He takes the position formerly held by **John Cotton** of Takoma Park.

George L. Baker has asked to be relieved of his duties as assistant director of the Delaware Agricultural Experiment Station. **Samuel A. Dum** has been named acting assistant director. Baker will continue in his post as head of the station's chemistry department.

Julian S. Moore is the new extension poultryman with the University of Florida Agricultural Extension Service. He succeeds **Frank S. Perry,** who was previously transferred to district county agent work. Moore is a graduate of North Carolina State College and the University of Georgia. He taught at the University of Georgia, has been county agent in Georgia, and for the past six years has managed a large poultry farm in that state.

Claude V. Morgan, Oxford, N. C., was recently elected president of the North Carolina Association of County Agents. Other officers are: **George Hobson,** Charlotte, first vice president; **O. P. Owens,** Lumberton, second vice president; and **C. C. Clark, Jr.,** secretary-treasurer.

Paul E. Miller, director, Minnesota Agricultural Extension Service, has been named to an international agricultural committee to survey farming conditions in the Marshall Plan countries of Europe. Other extension representatives on the committee are **Dean A. L. Deering,** director, Maine College of Agriculture; and **A. H. Maunder,** Nebraska extension supervisor. The committee left January 14, and expects to be on the project four months.

James H. Limbird assumed responsibilities as county agent of Geauga county, Ohio, on January 15. He succeeds **Charles A. Haas,** who has recently been promoted to the position of district manager of the extension service.

J. A. Pinckard is now associated with Julius Hyman & Co., Denver, Colo. Pinckard received his Ph.D. from the University of Wisconsin in 1934, and since that time has served as plant pathologist with the Virginia, North Carolina and Mississippi Experiment Stations, and later was field pathologist for Rohm & Haas Co.

The Society for Visual Education, Inc. was sold recently to **James L. Garard. Marie Witham,** former president, SVE Company, will continue to remain with the company as a director and a consultant to SVE. New headquarters for the Society for Visual Education, Inc. are located at 1345 W. Diversey Parkway, Chicago 14, Ill.

The Manual Arts Press, Peoria, Ill., publishers in the field of industrial education, has changed its title to Chas. A. Bennett Co., Inc. The new name was adopted as a 50th anniversary memorial to its founder, the late Charles A. Bennett.

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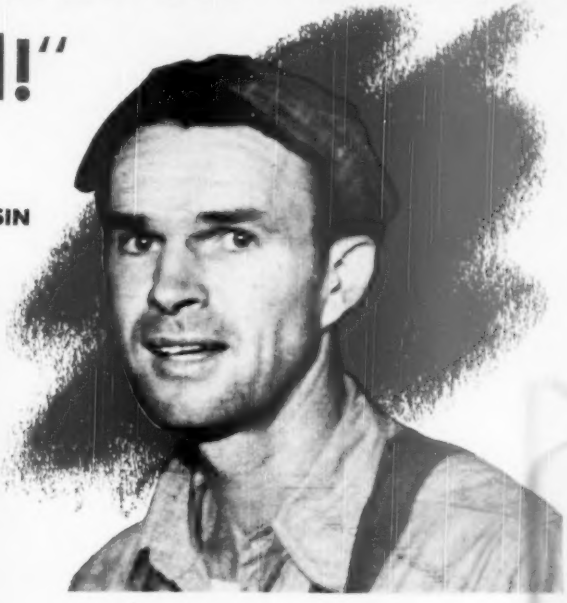

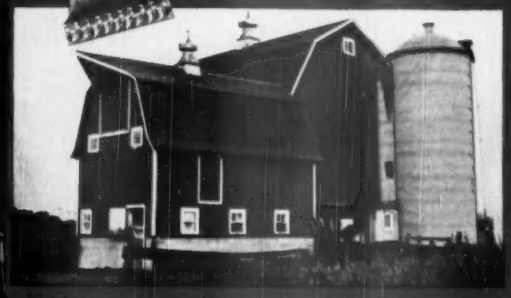

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"We especially like the shape and style of the tube. It is fine. Cows do not seem to object and the thin taper makes it mighty easy to insert in the quarter. The ointment comes out easily, too, so it only takes a few seconds to treat a quarter.

"Whenever there is the least sign of mastitis in our herd, we treat the cow then and there, as we keep Penicillin tubes in the barn all the time."

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It's a good idea to do what Mr. Lubeck does: keep some Squibb Instant-use Penicillin *on hand* right in the barn, and treat mastitis early—as soon as it shows up.

Why not get a dozen tubes the next time you're in your drug store? They have it or can get it for you.

For accurate diagnosis of mastitis, consult your veterinarian.

For SCOURS in calves and other young animals—PENOVOXIL CAPSULES. A specially prepared, exclusive Squibb formula—only product of its kind on market. Effective—easy to use—no drenches—no injections. If your druggist isn't supplied, write to E. R. Squibb & Sons, Veterinary and Animal Feeding Products Division, Dept. BFM-3, 745 Fifth Avenue, New York. Literature on Penovoxil Capsules, Penicillin Ointment, and other Squibb specialties, available on request. Just drop us a postcard for yours.

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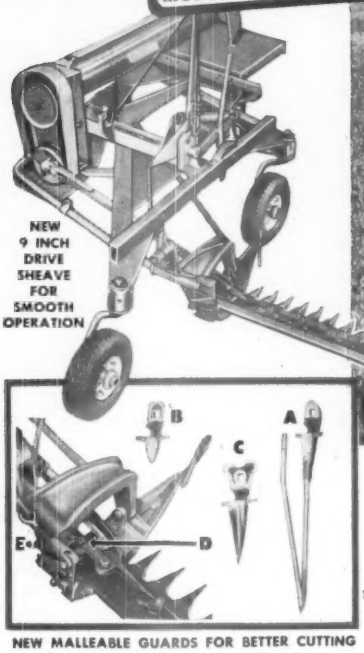

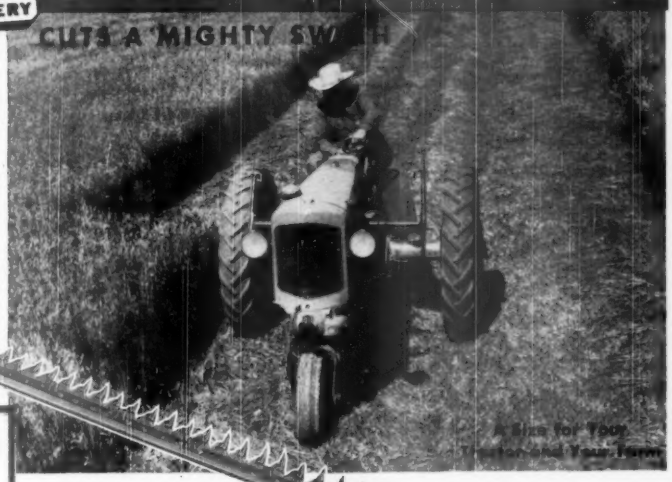

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Optional weed cutting attachment (below) is adjustable and holds cutter bar at any uniform height above ground up to 12 inches. Cuts weeds above the tops of crops and cuts over rocky fields.

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As a progressive farmer, you well realize the advantages of getting more work done in time and on time *everytime*. The MM Uni-Mower was engineered to help you do more work in less time and with greater ease and safety. Satisfied farmers *everywhere* say the Uni-Mower permits them to cut their hay at the *proper time*, cut their hay crop faster and easily handle even tough cutting.

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CHECK THESE FEATURES FOR VALUE:

Greater Flexibility: Mower mounting at the rear of the tractor completely eliminates side draft. Caster wheels follow the contour of the ground to do a more uniform job of *getting all the crop!*

Greater Rigidity: Heavy-duty "push-pull" bar keeps the sickle always in line and assures *greater* rigidity of cutter bar. Finest quality roller bearings on all major shafts and drives provide a smooth, easy cutting action.

Greater Safety: Power take-off and V-belt pulleys are shielded to provide greatest possible safety for the operator. The MM Uni-Mower, mounted behind tractor, permits the operator to see an obstruction before it is hit.

Easier Operation: Safety release spring hitch protects the mower and driving mechanism against breakage. Cutter bar mechanism automatically pivots backward if an obstruction is hit. This allows time to stop the tractor before damage can occur. Operator simply backs up the tractor and hitch automatically re-engages. V-belt protects the sickle if an obstruction is hit. The Uni-Mower is designed so that operator can easily cut square corners . . . get all the hay . . . and do a clean, fast job.

Easier, Less Costly Maintenance: Malleable sickle guards are easily replaced with one bolt. Pea Vine guards (A) eliminate clogging when heavy pea vines are cut. Stub guards (B) prevent weeds and heavy stalk and brush from clogging sickle. Rock type guards (C) prevent mis-alignment and breakage when mowing over stony ground. Uni-Mower has quick and easy adjustment features: Adjustable sickle guide (D) holds sickle in place and adjustable eccentric pin bearing (E) aligns cutter bar with pitman drive. MM's Uni-Mower has positive V-belt drive and heavy-duty "push-pull" bar.

Hydraulic Lift Linkage: Labor-saving, convenient hydraulic lift linkage available as optional equipment in place of foot lever or rope and pulley lift.

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